

AMERICAN

FEBRUARY, 1948

68th Year

# ARTISAN

RESIDENTIAL AIR CONDITIONING • WARM AIR HEATING • SHEET METAL CONTRACTING

## *In This Issue*

One of the reasons for the shortage of sheets is the tendency for some mills to finish the steel they make, now, when they used to sell it to fabrication plants. See Kruckman—Page 70.

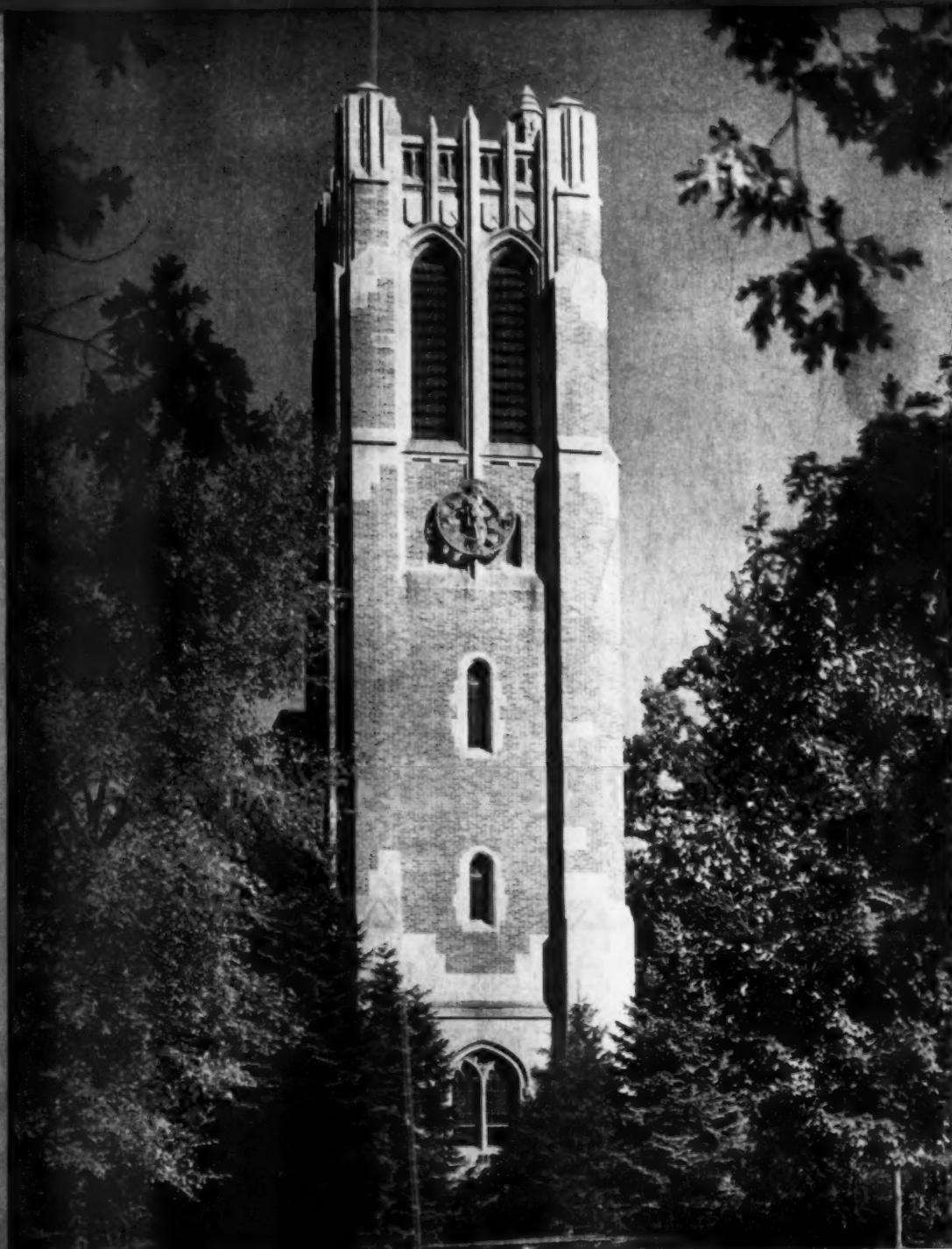
A way to effect tax savings and also assure the future operation of your business is discussed by Joseph Dingle in his article on Page 77.

The final installment of the Ductwork Estimating Tables is published on Page 91. Now that the series is complete it will be reprinted and available soon.

"The Spotwelder—Industry's Sewing Machine" is an article that gives a fine picture of the place of this type of metal joining in modern production practice. It begins on Page 99 and is the first of two parts.

### **The Cover Picture**

Beaumont Carillon Tower on Michigan State College Campus at East Lansing, scene of the annual Warm Air Short Course. Page 83.



# C&L LAMNECK FURNACE PIPE & FITTINGS



## PRECISION PAYS!

**FASTER ASSEMBLY**

**STANDARD SIZES**

**CLOSER FITTING**

**LASTING SATISFACTION**

C&L-Lamneck precision fabrication pays off. Installation time is held to a minimum and jobs can be figured with accuracy. The finished job is a credit to the contractor and a complete satisfaction to the customer.

The complete gravity line is now being supplied. The 700 system for Forced Air is complete *except* for plenum chamber, trunk, and large trunk fittings.

### Other C&L Products

C & L-Blow Torches, Fire Pots, C&L-Hoffman Water Heaters, C & L-Monarch Panic Exit Devices, C & L-Buckeye Grain Bins, Corn Cribs, C & L-Silver Shield Silos

*Specify...* **C & L-LAMNECK FROM YOUR JOBBER**

Write for catalog.

**CLAYTON & LAMBERT MFG., CO.**

1760 DIXIE HIGHWAY, LOUISVILLE 10, KY.



*Lamneck*

**FURNACE PIPE  
AND FITTINGS**

**SELL MORE  
EARN MORE  
HAVE MORE!**

**EVAPORATIVE KOOLER-AIRE  
WITH GYRO-SPRAY GIVES YOU  
MORE TO DO BUSINESS WITH**

★ Outstanding Leadership • Greater Product Value • Smart Sales Promotion • Plus Cooperative Engineering Counsel

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Como Ave. S. E. at 33rd St. • Minneapolis 14, Minn.

*Evaporative*  
**Kooler-aire**

**THE MAGIC WORKER IN LOW COST COMFORT COOLING**

United States Air Conditioning Corporation  
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Tell me more about the new usAIRco  
Evaporative Kooler-aire.

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# AMERICAN ARTISAN

Member—Audit Bureau of Circulations  
Member—Associated Business Papers

RESIDENTIAL  
AIR CONDITIONING  
WARM AIR HEATING  
SHEET METAL CONTRACTING

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

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### EDITOR

JOHN E. PETERSON

### ASSOCIATE EDITOR

JOHN McCULLOUGH

### ASSISTANT EDITOR

A. A. KENNEDY

### ADVERTISING STAFF

WALLACE J. OSBORN

New York City

Murray Hill 9-8293

ROBERT A. JACK

Cleveland

Yellowstone 1540

JAMES D. THOMAS

GEORGE C. CUTLER

Chicago

State 6916

ROBERT P. WETTSTEIN

Los Angeles—Tucker 2779

San Francisco—Yukon 6-2522

Seattle—ELiot 2365

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*Founded 1880*

**FEBRUARY, 1948**

*Volume 117, No. 2*

AMERICAN ARTISAN, February, 1948

# Old Man Oil Shortage

*Won't Bother You  
If You Install*

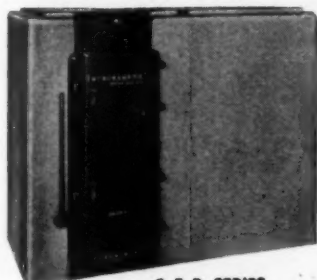
**SYNCROMATIC**



*America's* BEST  
FURNACE CAN BE EFFICIENTLY  
OPERATED ON COAL UNTIL  
OIL IS AVAILABLE

*Syncromatic's*  
**"HEAVYWEIGHT"**  
AND IS HE TOUGH!

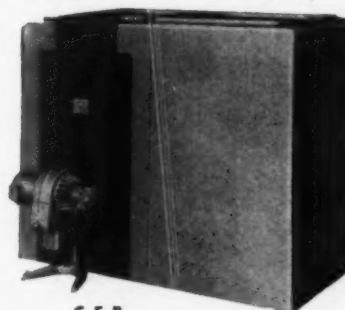
● CONVERSION FROM COAL TO OIL CAN BE EASILY  
ACCOMPLISHED AT SMALL COST AND WILL GIVE YOU AN  
OIL FURNACE SECOND TO NONE IN LOW OPERATING COST



C. F. B. SERIES  
COAL HAND-FIRED  
FORCED AIR

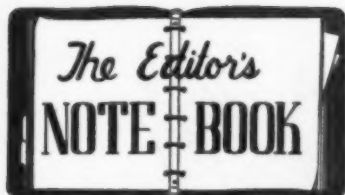
## *Note:*

HAVE YOUR CUSTOMER KEEP  
HIS GRATES AFTER HE HAS  
CONVERTED TO OIL IN CASE  
SOME DARN FOOL TALKS  
ANOTHER OIL SHORTAGE



C. F. B.  
CONVERTED TO OIL FIRING

*Syncromatic Corporation*  
WATERTOWN, WISCONSIN



### So It Goes

There's a story from Hartford, Washington, that says the atomic energy installation there had its pick of top scientists from among a daily average of 100 job applicants.

On the other hand, those operating the plant complained that they were unable to get a response from even a small number of badly-needed bricklayers.

### "Ding's" Cartoon

The cartoon by J. N. Darling in the December issue of *AMERICAN ARTISAN*, page 84, so aptly describes one of our biggest headaches we will be willing to pay any reasonable price for 100 reprints, if they are available.

Please advise.

E. J. GIBSON.

John H. Kitchen & Co.  
Kansas City, Missouri.

We would like, if it is possible, to get a large copy of the cartoon titled "Its Getting Along About That Time of Year," which was on page 84 of the December issue.

Thank you for your past cooperation.

HARRY C. RHOADES.  
Colonial Heating Co.  
Rockford, Illinois.

Can we obtain a mat, 2 columns by 5 inches of the cartoon, "Its Getting Along About That Time of Year"?

ROBERT W. DRING.  
R. W. Dring & Son  
La Porte, Indiana.

This cartoon, suggested to J. N. Darling by Roger Keith, a warm air heating contractor



### Note How Simple it is to Set the Range Adjustment on a Mercoid Control

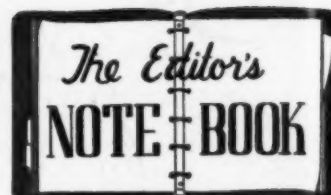
One outstanding feature about Mercoid Controls is the ease in making operating adjustments.

You simply use your fingers—no tools whatever are needed. On either the Type M-41 Furnace Limit Control or the Type M-43 Furnace Fan Control, the adjustment mechanism is alike. You press the small knob in center of the cover and turn it left for the desired low setting, then pull the knob and turn it to the right for the desired high setting as indicated in plain view on the calibrated dial. That's all there is to it—done in a matter of seconds.

This is only one of the many other features you'll like about Mercoid Controls.

We will be glad to send you a Mercoid catalog upon request.

THE MERCOID CORPORATION  
4201 BELMONT AVE., CHICAGO 41, ILL.



of Des Moines, Iowa, has aroused much interest among our readers. We have prepared reprints of the cartoon, including Mr. Keith's discussion, and these are available as follows:

A quantity of 25 or less will be mailed without charge upon a reader's written request.

Quantities up to 500 will be billed at \$1.50 per hundred.

Prices for quantities of 1000 or more will be quoted upon application.

Large copies (blow-ups) can be furnished in any size and in any quantity. These prices also, will be furnished on application.

We do not have mats available, and since our permission to reprint the cartoon did not include further transmittal, it would be necessary to procure specific permission for the use of mats from the *Des Moines Register*.—ED.

### Timely Reminder

Automobiles and trucks should be washed frequently during the winter months to avoid damage from the salt-abrasive mixtures used to melt street ice and snow, suggests the Chevrolet Motor Division.

Street brine when splashed on a car or truck may not only damage the body paint, but also the chassis. A weekly bath not only improves the appearance, but also adds to the life of your transportation equipment.

Salt is used by many highway departments, because it decreases the freezing point of water to approximately seven degrees above zero.



# WEIR-MEYER DEALERS get the cream



## WEIR-MEYER MEANS MODERN HEAT FOR EVERY FUEL

### GAS



Sell the ultimate in convenience and heating efficiency! Both "hi-boy" and conventional MEYER Gas-fired Air Conditioners are available now, plus Gas-fired gravity furnaces, for L. P. as well as pipe line gas. Leak-proof heating elements of one-piece welded steel for faster heat transfer.

### OIL



Exclusive all-steel heating element with stainless steel combustion chamber assures peak efficiency, long-life, and freedom from servicing. Compact, smartly-styled Oil-fired Winter Air Conditioners include new "hi-boys" for basementless homes.

### COAL



The famous WEIR — the original steel furnace — now gives you exclusive new improvements. New Integral Heating Element (Pat. applied for) offers amazing efficiency, new cleanliness and economy. Many WEIR steel furnaces have been in continuous operation for over 50 years — still perform efficiently.

80 years experience shows that year after year the WEIR-MEYER franchise is many dealers' most valuable asset! All equipment — for all fuels — comes from one reliable manufacturer. That makes inventories lower — estimating and installation easier. And, WEIR-MEYER quality makes it easier to get the business you want.

## COMPLETE FRANCHISE PROTECTION

WEIR-MEYER's sound factory policies recognize the need for legitimate distributor-dealer profit and franchise protection. The WEIR-MEYER franchise is practical and proven — protects both your fair profit and your investment in time and money.

## SOUND AGGRESSIVE MERCHANDISING

Your customers know and want the quality, economy, and dependability that's traditional with WEIR-MEYER equipment. Consistent merchandising and advertising helps you sell. If you're not already selling WEIR-MEYER, write today. You may be in "open" territory — eligible for franchise.

## THE MEYER FURNACE COMPANY

MANUFACTURERS OF WEIR-MEYER FURNACES • AIR CONDITIONERS  
FOR GAS • OIL • COAL • FACTORIES: PEORIA AND PERU, ILLINOIS  
GENERAL OFFICES: PEORIA 2, ILLINOIS



Gas-fired  
Hi-boy



Gas-fired  
Air Conditioner



Gas-fired  
Gravity



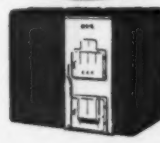
Oil-fired  
Hi-boy



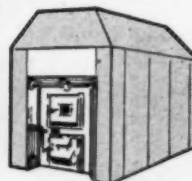
Oil-fired  
Air Conditioner



Weir  
Steel Furnace



Coal-fired  
Air Conditioner



Industrial & Commercial  
Heating Equipment

## The Editor's NOTE BOOK

### Oil Heating Survey

More than 75 men, traveling in a motorcade from Bloomington, Illinois, left early on January 16, for Champaign—50 miles away—to survey as many oil heated homes as possible, by nightfall.

With handbooks, instruments, and facts on home heating practices, they inspected homes from attic to basement to turn up heat losses and things that contribute to fuel waste.

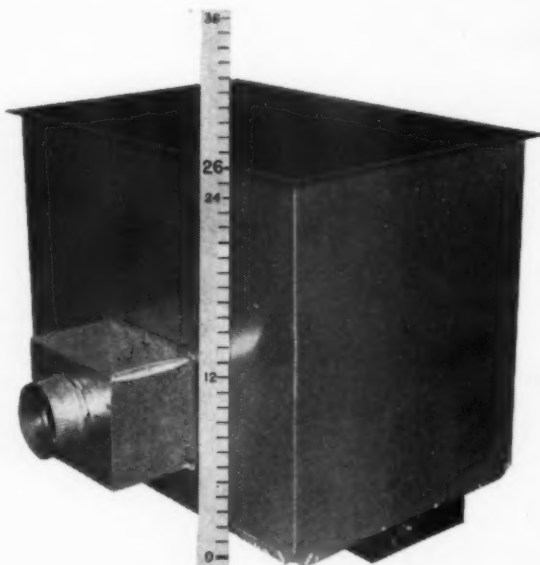
Believing that anywhere from 10 to 50 per cent of the fuel oil being used to heat the American home is wasted—mostly unknowingly—the Eureka Williams Corporation initiated the survey to help conserve fuel oil and alleviate the threatened national home heating emergency.

The researchers concerned themselves with all phases of automatic home heating—insulation, storm sash, weather stripping, caulking and poor heating practices, as well as with oil burners and heating plant performance.

Preliminary tabulations show many reasons why the average home can save fuel oil. Here are some of the reasons:

36 per cent of the homes kept their thermostats above the recommended healthful temperature of 70 degrees.

87 per cent of the homes had heating plants that were operating below par. In many cases, only minor adjustments of their oil burners, and minor repairs or servicing of the furnaces would be necessary to correct this. In some cases, however, oil burners were old



## It's Available Now!

# The New JOHN ZINK "SHORTY" FLOOR FURNACE

50,000 Btu/hr.

A.G.A. Approved

— ONLY 26" DEEP —

This new No. 50 floor furnace is especially designed for installation where under-floor space is limited. Being only 26" deep, it can be installed where foundations are extremely low, eliminating the necessity of making a pit.

Burns Natural, LP and Mixed Gases

Write for Literature

## John Zink Company

4401 South Peoria

TULSA, OKLAHOMA

New York - Salt Lake City - Houston - Los Angeles

## The Editor's NOTE BOOK

and worn out, remnants of the days before the war when the only thought was to have plenty of heat regardless of the oil consumed.

Only 20 per cent of the homes were weather stripped.

Less than 50 per cent had storm sash. This alone would save 15 to 20 per cent on fuel bills.

Slightly more than half the homes were insulated, yet this rewards homeowners with a large saving in fuel costs, and at the same time improves comfort.

Less than one-half said they set back their thermostats at night. A five degree set back, it is estimated, would save five per cent of the annual fuel bill.

Only 3½ per cent had clock thermostats, which would assure automatic set back of night temperatures.

The researchers received wholehearted cooperation from the homeowners of the community who evidenced a desire to save vitally needed fuel oil—and their own money as well.

The warm air industry has a moral responsibility to analyze heating performance and correct inefficiency at a time like this, when diligent application of our experience with home heating systems can do so much to alleviate an emergency and forestall governmental control of a fuel that is so vital to our industry's well-being.

In an emergency like this, the homeowner has a right to expect the same scientific analysis of his heating system as he would from the medical profession during an epidemic.

# THERE ARE MORE THAN 12,000 LOCKFORMERS IN DAILY USE . . .



One man  
with a  
Lockformer  
can make  
more  
Pittsburgh  
Locks than  
sixteen men  
with  
eight brakes

. . . or almost one Lockformer for every Warm Air Heating and Ventilating Contractor in the United States!

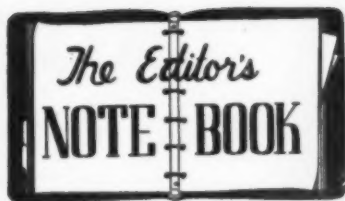
This adoption of Lockformer fabrication goes beyond mere preference; practically speaking, it means the Industry has standardized on Lockformer Equipment.

Thank you for this undisputable endorsement!



## THE LOCKFORMER CO.

4615 ARTHINGTON STREET • CHICAGO 44, ILLINOIS



#### Hardware

I am in need of stainless steel or nickel plated brass hardware for kitchen and restaurant equipment, such as drawer pulls, drawer runners, hinges, brackets, and tubing for cafeteria counter tray rails.

If you can direct me to some company who is in a position to furnish this material, I would appreciate it very much.

C. K. PETITFILS.  
Butterow Sheet Metal Works  
Galveston, Texas.

Attached is a list from our annual Directory Issue giving the names and addresses of manufacturers of hardware for cabinets and casings, and tubing. If you will write these companies, telling them your requirements, we are sure you will receive descriptive literature on the items you are looking for.—ED.

#### Millionaires

Will it ever be possible for another American to build up a fortune like Henry Ford?

Many persons recently polled on this question answered "yes." They were convinced there was equal opportunity today to duplicate the successes of our pioneers.

However, most of those who believed that it is possible to amass a fortune today estimated that about 50 per cent of a million dollar yearly income would be paid to the tax collector.

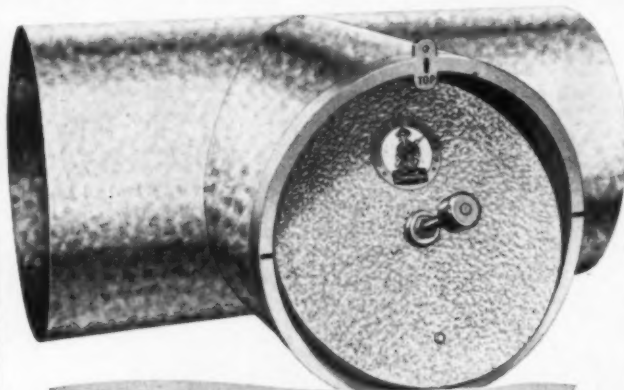
Few realized that a married person with two dependents would pay nearly 84 per cent in taxes, or \$838,850 out of \$1 million income.

# SAVE

HARD TO GET FUELS

WITH *Sentry*

## FUEL and HEAT CONTROLS



### SENTRY DRAFT REGULATORS

- FEATHER-LIGHT SENSITIVITY TO AIR CURRENTS
- COMPLETELY AUTOMATIC OPERATION
- NON-CORROSIVE BRASS BEARINGS
- FULLY WARRANTED AND GUARANTEED
- DURABLE, RUGGED CONSTRUCTION
- NO SERVICING NECESSARY

### AT-A-GLANCE TANK GAUGES

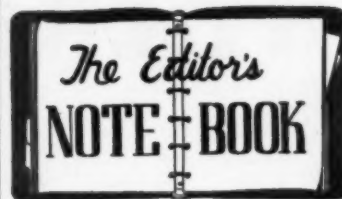
- ACCURATE CAPACITY READING
- LONG RANGE VISIBILITY
- NO COMPLICATED MECHANISM
- SAFE UNDER PRESSURE
- GUARANTEED LEAKPROOF
- UNDERWRITERS' LISTED



On guard  
24 hours  
a day!



**KRUEGER *Sentry* PRODUCTS**  
GREEN BAY • WISCONSIN



#### C A C

In the November 1947 issue of AMERICAN ARTISAN there appeared an article "Five Checks for Comfort Dividends" by S. Konzo.

Is it possible to obtain two copies of this article?

F. C. PAYTON.  
Central Natural Gas Company  
Vermilion, South Dakota.

Our supply of tear sheets from cut copies of the November issue is becoming depleted. We are sending you one set of tear sheets which we hope will at least partially fulfill your need for this article.—ED.

#### Money and Russia

Inflation is producing more injustices than the evils the President proposes to eliminate in his state of the union message.

Inflation results when the supply of money exceeds the supply of goods. Such a situation is a natural result of war. Money accumulated in Russia during the war just as it did in other countries. Russia got rid of its excessive money supply by arbitrarily taking away 90 per cent of it from those who had saved it.

During the war, Russia used money as the easiest way to secure maximum production. When the money supply becomes troublesome, dictators just pull it back and the man who earns it can whistle. We don't do things that way in this country.

*Warm Air Furnaces!  
Winter Air Conditioners!*

You can find just what you need  
in the complete **SUNBEAM** line

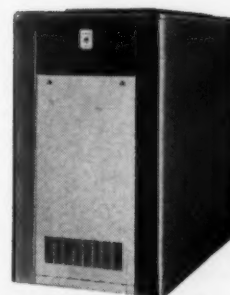
by **AMERICAN-Standard**



**CHIPPEWA** Winter Air Conditioner. For small homes. Cast iron heating element is same as used in deluxe Mohawk unit. Has precision ground contact surfaces and asbestos packed, leakproof joints. Entire unit including controls, is enclosed in single, compact jacket—all completely assembled. Removable panels permit easy access to all parts. Capacity is 60,000 Btu input per hour.



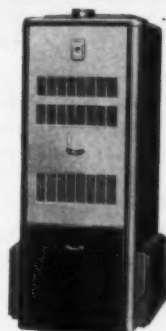
**MOHAWK** Winter Air Conditioner. Features cast iron burner with patented high temperature alloy, corrugated ribbons . . . durable cast iron heating element proportioned for maximum heat absorption, with section halves tightly joined for leakproof union . . . preheating of return air for fuel economy. 8 sizes, from 80,000 to 300,000 Btu input per hour.



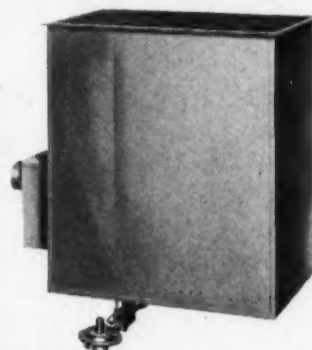
**SARATOGA** Winter Air Conditioner. A modern low-priced oil fired unit for small homes. Features heating element of heavy boiler plate steel with riveted and welded seams. Compact jacket encloses blower-filter unit and heating element . . . also provides space for Arcoflame or other quality burner.



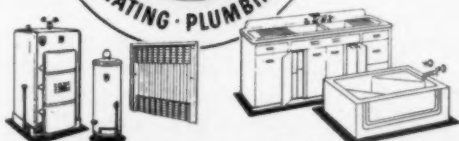
**KENWOOD** Warm Air Furnace. An easy-to-assemble unit for coal, in pipe and pipeless types. Tight, deep cup joints prevent gases from escaping into the air heating chamber. The one-piece radiator is correctly sized for increased capacity and efficiency. Comes in 6 sizes.



**WYANDOTTE** Winter Air Conditioner. Burns natural, manufactured, mixed or liquefied petroleum gas. Ideally suited for first floor or basement installation where space is at a premium. Has copper bearing steel heating element. In 4 sizes—from 55,000 Btu input per hour.



**SAGINAW** Floor Furnace. A gas fired unit for small homes with or without basement. Its many outstanding features include heavy gauge steel combustion chamber and radiator proportioned for efficient performance. Shipped completely assembled for easy installation. 4 sizes, from 20,000 to 57,000 Btu input per hour.



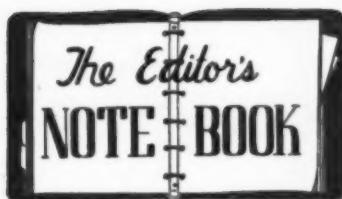
■ Once again you can be sure of quality and of customer satisfaction when you sell warm air heating. As a result of accelerated American-Standard production, more and more of these nationally famous Sunbeam

products are ready for you. For details of the complete line, contact your Wholesale Distributor.

**American Radiator & Standard Sanitary Corporation**, P. O. Box 1226, Pittsburgh 30, Pennsylvania.

**AMERICAN-Standard**  
*First in Heating and Plumbing*

**LOOK FOR THIS MARK OF MERIT**—It identifies the world's largest line of Heating and Plumbing Products for every use . . . including Boilers, Warm Air Furnaces, Winter Air Conditioners, for all fuels—Water Heaters—Radiators, Convectors, Enclosures—Gas and Oil Burners—Heating Accessories—Bathtubs, Water Closets, Lavatories, Kitchen Sinks, Laundry Trays, Brass Trim—and specialized products for Hospitals, Hotels, Schools, Ships and Railroads.



### The Task Ahead

The fiscal problems confronting America grow not only in magnitude but in their very complexity.

Federal taxation and government borrowings against the future are no longer merely necessary nuisances to an expanding national economic life.

They now constitute the very framework of all economic effort, shape the course of its development, and accelerate or retard the pulse-beat of business and industrial activity.

They are a lien upon past savings as well as a charge against the productivity of generations unborn.

What we hand on to our children depends, in large measure, upon the wisdom we display in conserving their inheritance.

We have discovered, at painful cost, that prosperity cannot be turned on and off at will, like water from the spigot. The laws of economics are immutable and carry over from generation to generation. When times get difficult, particularly, there is a tendency to seek shortcuts by trying to amend these laws. But frequently, these economic panaceas, heralded as new, turn out to be full of the same old fallacies which have plagued governments since the very beginning of time.

Inflation, for example, is an ever-recurring evil. It is the inevitable accompaniment of war and governmental waste and extravagance. Its earliest manifestation occurred when kings clipped the gold content

## It takes Genuine Wagner Parts to retain the high quality of Wagner MOTORS

**Wagner Motor Parts  
ARE AVAILABLE  
at 325 authorized  
service stations displaying this sign**



Wagner designs and builds each motor part to assure dependable service for which Wagner motors are world-famous. When it's a Wagner motor, be sure to put in genuine Wagner motor parts.



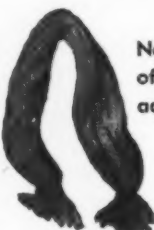
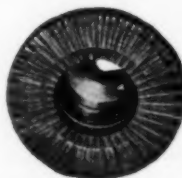
Dependable switches with silver contacts.

Correct-grade brushes assure new motor performance.



Rigid, lightweight, one-piece brush-holder assemblies have carefully selected springs to assure proper contact between brushes and commutator.

Commutator originally designed as an inherent part of the motor.



Nonhardening wicks of pure wool which actually filter the oil.

Full-finished bimetal bearings ready to install. May be had unbored for undersized shafts.



M45-88

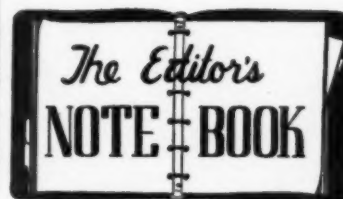


### Ask for Catalog MU-40.

Every repair shop needs one. It helps you determine the catalog number and price of Wagner motor parts.

## Wagner WE Electric

6371 Plymouth Ave., St. Louis 14, Mo.



of the coinage and thus diluted the money supply.

But modern governments have improved on this ancient royal custom. A more cunning deceit is now practiced on the people. Governments now employ three devices to reach the same result: they seek to *manage* the national economy; they manipulate the credit, or they issue bonds or currency—in effect, they find the printing press still indispensable. By this type of controlled inflation they are able to spend, for long periods, beyond their revenues! This, in the last analysis, is always the real meaning of inflation.

Like every other nation in the world today, America stands on the brink of fateful decisions. The pleasant illusion of inexhaustible plenty may actually mask an eventual fiscal insolvency; the importance of self-denial and hard work are minimized. Even more, America is faced with a moral crisis: nowadays there is an unwillingness to face unpleasant facts and that peculiarly American habit of preparing for a rainy day, which builds toward a sound future. —JOHN W. HANES, in the *Tax Outlook*.

### BERP

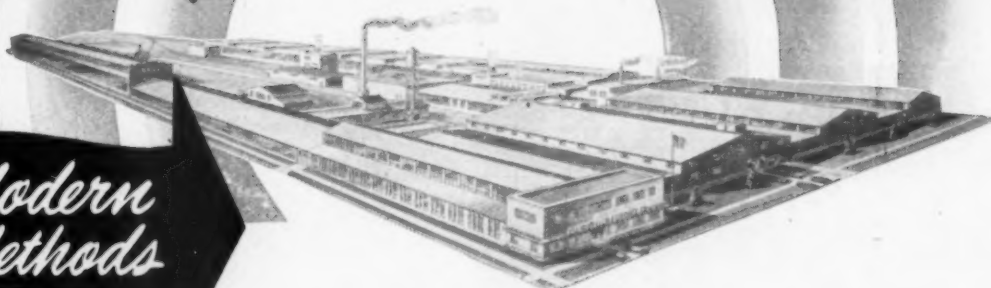
If you have not been keeping up with the alphabetizing of things lately, ERP has become the contraction for: European Recovery Program.

Some sources, quickly recognizing the efforts toward establishing the program on a bipartisan basis, obliged with BERP: Bipartisan European Recovery Program.



The Mueller Climatrol Type 202 Oil-Fired Winter Air Conditioner can be supplied with either a pressure-atomizing or a vaporizing-type burner. Both the 202 and its companion 201 Gravity Furnace (above) are convertible to AGA-listed gas-fired units at low cost.

*Modern  
Methods*



*... give you Mueller Climatrol products  
that you can sell with confidence and pride*

If you could make a trip through Mueller's modern factory, you'd know why you can always count on Mueller Climatrol to deliver the goods. It covers a broad expanse of over 15 acres. Every square foot is devoted to the manufacture of quality products by the latest methods and equipment — to give you every competitive advantage in your selling — and to give your customers extra-dollar value in quality!

The heart of this great modern plant is the Mueller Climatrol engineering laboratory. Its job is to keep Mueller Climatrol products in the lead. That standard has built the 91-year reputation of

the Mueller name. That standard has kept the Mueller Climatrol dealer on top.

You can chalk up another successful job every time you install a Mueller Climatrol! Experience has taught you that. You know Mueller Climatrol delivers years of satisfying comfort with economy. And you know you've gained another warm supporter to whom you can refer future prospects.

Sell Mueller Climatrol for every job — it really pays! For additional information — write for bulletins today! *L. J. Mueller Furnace Co., 2010 W. Oklahoma Avenue, Milwaukee 7, Wisconsin.*

**MUELLER**  
*Climatrol*  
REG. U. S. PAT. OFF.

B-79



FOR GAS



FOR OIL



FOR COAL



## YOUR CUSTOMERS of tomorrow must be PRE-SOLD TODAY!

They'll be *your* customers—or someone's customers—tomorrow, these builders of tomorrow's homes. Today, they're just collecting ideas. And while they're gathering, nothing can equal the sales power of a hearty word of praise for modern warm-air heating systems from a man who owns one.

Today, this sales force of satisfied owners is more than *two million*, and it's growing fast—over 400,000 forced-warm-air units installed last year. And it's important to keep these owners satisfied—keep them pre-selling tomorrow's customers.

Dirt-clogged filters hamper any system. But

owners who use DUST-STOP® Air Filters, and change them regularly, save fuel and money—get the clean, filtered air their system was designed to produce. And now is a good time to check back. Cover last year's customers. If you can, *recheck all your old customers*. Make sure their systems are working well—that they get new DUST-STOP Air Filters when they need them.

It's extra business—*extra profits*—for you. And it's a good way to keep in touch. Keep your customers selling for you. A new Spring Promotion Kit is available to help you. Order from your distributor, or write Owens-Corning Fiberglas Corporation, Dept. 930, Toledo 1, O.

*In Canada: Fiberglas Canada, Ltd., Toronto, Ontario.*



# DUST STOP

\*T. M. REG. U. S. PAT. OFF.

## AIR FILTERS a Fiberglas product

# CRITICAL FUEL SHORTAGE GRIPS NATION

Consumers Told Not to Heat Homes Above 70 Degrees in Daytime and 60 at Night

Washington, D. C. - Interior Secretary J. A. Krug Thursday urged that no more equipment be installed anywhere for burning oil, gas or "bottled" gas.

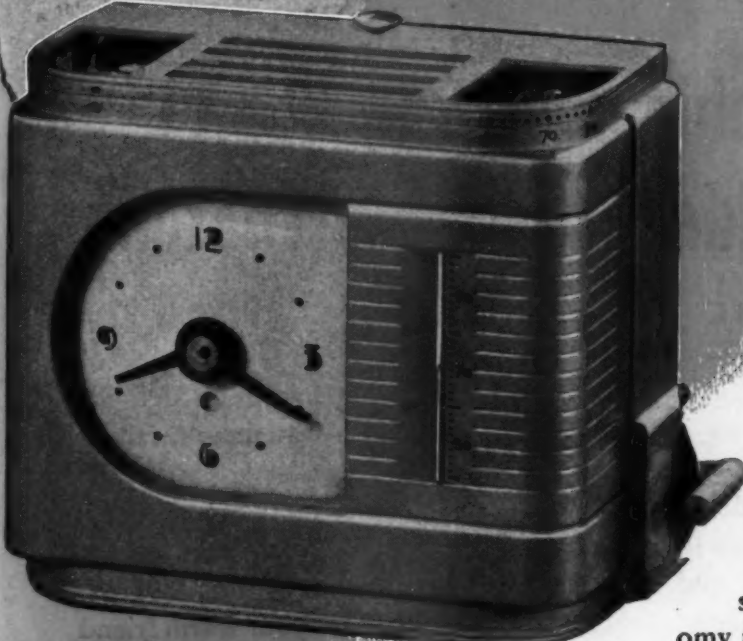
He also: 1. Urged that homes, offices, apartments, hotels kept at 70 degrees during the day and 60 at night.

Wednesday's cold spell, the most severe of the winter, extended eastward and southward from the Rocky mountains. Extreme cold caused fuel shortages and other hardships in Georgia, Florida and other southern states that were unprepared for freezing temperatures. The mercury dropped to 20 below zero in Miami.

More snow also was forecast for the city and the state, with drifting by a strong southwest squall and fiercer Thursday when the wind shifts to the west.

## 9 out of 10 Homes Need the *Magic Dial* CLOCK THERMOSTAT Today!

✓ Promote it! ✓ Sell it!



World's Finest Clock Thermostat — THE MAGIC DIAL Operates on any Two-wire or Series 10 Circuit.

# PERFEX

TWIN CONTACT CONTROLS

MANUFACTURERS OF AUTOMATIC CONTROLS BEARING THE TRADE MARK NAMES OF LEADING PRODUCERS OF AUTOMATIC HEATING SYSTEMS AND APPLIANCES

The urgent demand for fuel conservation *now* creates an unequalled need for the Magic Dial Clock Thermostat. Setting the Thermostat back at night has become a national necessity. Every heating system needs the Magic Dial Clock Thermostat. It provides that vitally needed fuel economy through automatically lowering night temperatures and automatically brings temperature back up to comfortable daytime warmth in the morning. Users save up to 33% on night set back operation.\*

Act today! Help meet and beat the fuel crisis by *selling* the Magic Dial Clock Thermostat. Available for immediate delivery! Order from your heating equipment manufacturer.

PERFEX CORPORATION, MILWAUKEE 7, WIS • Perfex Controls Ltd., Toronto 1, Ont.

\*Based on figures by Fuel Conservation Council, U. S. Government, 1944.

A COMPLETE LINE OF TWIN CONTACT CONTROLS FOR ALL TYPES OF HEATING





Partial view of the 93 unit Philadelphia development being built by Tyson Construction Company. Priced at \$10,500, all homes will be heated by Thatcher Gas Fired Winter Air Conditioners.



Mr. M. K. Tyson  
Tyson Construction Company  
Upper Darby, Pennsylvania

"After a complete investigation into forced warm air equipment available for use in Philadelphia—we specified Thatcher GA Comfortmasters to insure the future homeowners long life heating comfort plus economical operation."

## Leading Philadelphia and Suburban Builder Specifies Thatcher

### IN HIS NEWEST 93 HOME DEVELOPMENT

For years a recognized leader in Philadelphia and suburban building circles — Mr. Tyson has thousands of homes to his credit. He knows what the homeowner wants. As proof, all 93 homes in his newest development have been sold even though they won't be completed until Spring. Because he is so close to the homeowner — we feel it's important to note that Mr. Tyson specified Thatcher GA Comfortmasters in every one of these new homes, to insure heating comfort plus economical operation.

Your customers are in the market for the long life comfort — the economical

operation that Thatcher units deliver. What's more, they're already familiar with Thatcher's name and reputation. That's why Thatcher units are easier to sell. You'll find you pile up more profits when you recommend yourself by recommending Thatcher—your warm friend since 1850.



**GARWOOD, NEW JERSEY**



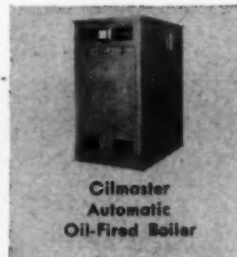
Comfortmaster  
Oil-Fired  
Air Conditioner



Comfortmaster  
Gas-Fired  
Air Conditioner



Triple-Fire  
All-Purpose  
Boiler



Gilmaster  
Automatic  
Oil-Fired Boiler



Thermaster  
Gravity  
Furnace



# GENERAL

## has the RIGHT filter for every JOB

**STANDARD  
MODEL 1A-25**  
FOR SMALL HOMES,  
SPACE HEATERS,  
HOT WATER HEATERS

\*Model 1A-25—  
4 1/4" high—3 1/2" dia.  
Filter Unit Surface  
31 sq. in. 1/8" pipe  
openings.



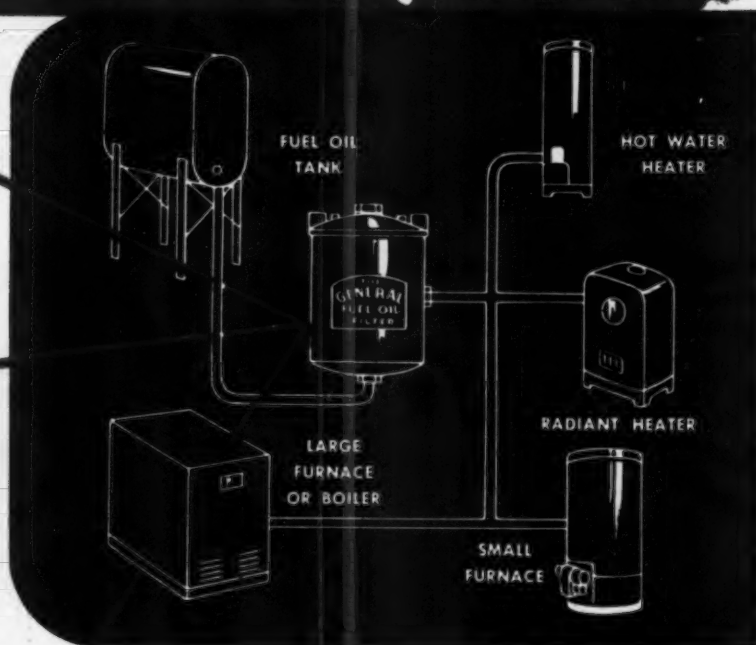
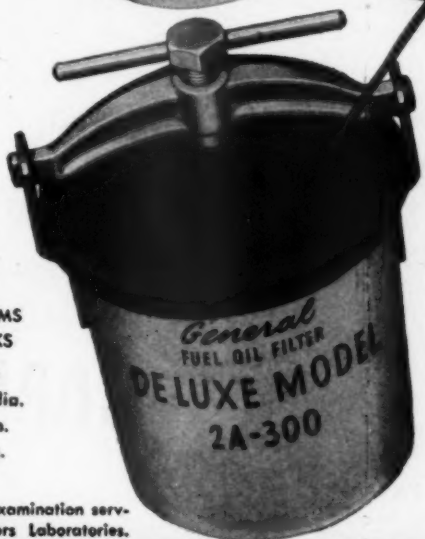
**MASTER  
MODEL 2A-700**  
ADEQUATE  
CAPACITY  
FOR AVERAGE AND  
LARGE SIZE HOMES

\*Model 2A-700—  
6 1/4" high—4-5/16" dia.  
Filter Unit Surface  
72 sq. in. 1/8" pipe  
openings.



**DELUXE  
MODEL 2A-300**  
JUMBO SIZE  
FOR LARGE SYSTEMS  
AND DIRTY TANKS

\*Model 2A-300—  
9-1/16" high—5 1/2" dia.  
Filter size 63 cu. in.  
1/8" pipe openings.



The General Filter's tremendous popularity with heating contractors, dealers, and fuel oil service companies is due in part to their ease of installation and their continued satisfactory operation. But more important is your ability to choose the exact filter to suit the job.

No matter whether it's a very simple installation involving only a small space heater, or whether it's a large boiler, or extremely dirty tank conditions, you'll find a GENERAL filter to suit the requirements.

General is leakproof—uses no die castings, no glass. Still they're economically priced. You owe it to yourself and your customers to investigate. Write to your representative listed below or to the factory for complete details.

\*Listed under re-examination service of Underwriters Laboratories.

**GENERAL FILTERS  
INCORPORATED**

CANADIAN FACTORY BRANCH: GENERAL FILTERS CANADA, 173 STRACHAN AVE. • TORONTO 10, ONTARIO

12890 WESTWOOD AVE.  
DETROIT 23, MICHIGAN

FACTORY REPRESENTATIVES: WILLIAM B. FORREST, Detroit, Mich.; Eastern Seaboard, V. B. KATHE and LES SHELTON; V. B. KATHE, Vancouver, Wash.; W. V. NUTTALL COMPANY, Salt Lake City, Utah; MANUFACTURERS SALES COMPANY, Kansas City, Mo.; L. E. SCHULEIN COMPANY, Chicago, Illinois; GRANSE CORPORATION, St. Paul, Minn.; RICHARD BARTHELMSS SALES COMPANY, Jacksonville, Fla.; T. C. FRENCH COMPANY, Meadville, Pa.; A. G. ALLEN COMPANY, Indianapolis, Ind.; JEFF A. HEDDEN COMPANY, Atlanta, Georgia.



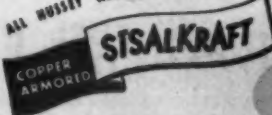
Hidden within many of the conveniences whose unfailing services you take for granted today is copper—and in the finest of these, genuine Hussey Copper. For this versatile metal provides nearly ageless durability combined with corrosion resistance, ease of fabrication, excellent conductivity and precise uniformity. Wherever your applications call for Copper's characteristics, depend on genuine Hussey Copper. Hussey warehouses in all principal cities are at your service.

**C. G. HUSSEY & COMPANY**  
(Division of Copper Range Co.)

Rolling Mills and General Offices: **PITTSBURGH, PA.**

Hussey Warehouses Carry  
Stocks of Copper and Brass  
Products for Prompt Delivery

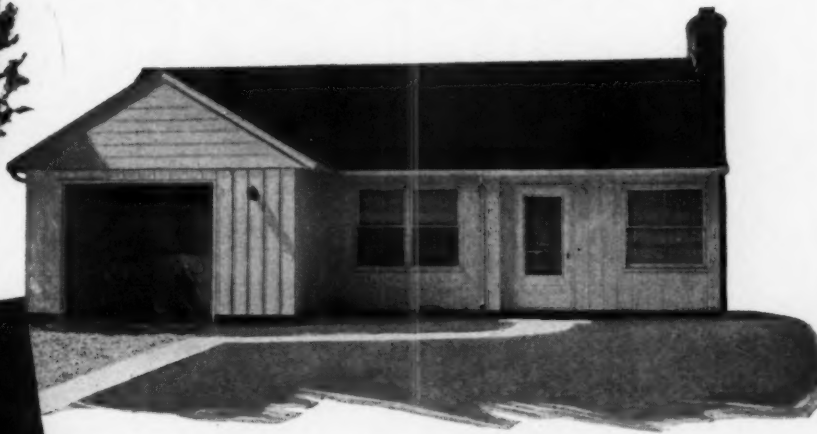
ALL HUSSEY WAREHOUSES CARRY



# HUSSEY COPPER

# NEW RADIANT PANEL SYSTEM LOWERS CONSTRUCTION AND HEATING COSTS FOR SINGLE FLOOR-PLAN HOUSES

One of 80 three-bedroom houses of the Kew Garden project designed by Mellenbrook, Foley & Scott and built at Berea, Ohio, suburb of Cleveland, by Taft and Blackman.

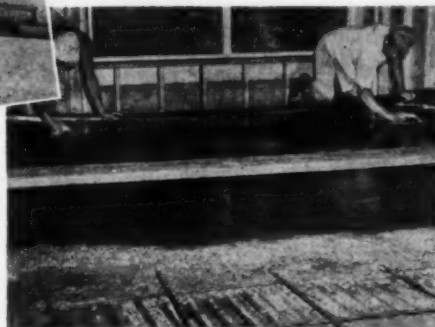


Typical floor plan; note location of the compact Janitrol Winter Air Conditioner in the combination kitchen-utility room.



Beginning of floor construction, two tiers of bricks are laid on concrete slab to form heat distribution ducts 5 1/2" deep.

Pouring concrete over corrugated sheet steel above the duct tiers on which reinforcing bars are supported.



● There's no guesswork about the results of these 80 warm air radiant heating installations, for many of these homes have been occupied for more than a year.

The system which employs a Janitrol Winter Air Conditioner, works beautifully and the home owners are immensely enthusiastic.

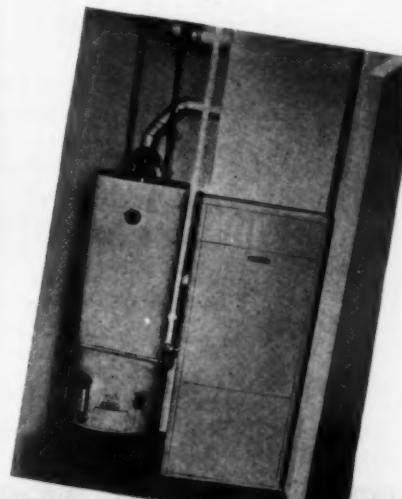
All of the floor area, except the garage, of these one floor type houses is radiant panel heated. The Janitrol gas-fired 105,000 Btu Winter Air Conditioner is located in the combination kitchen-utility room. See floor plan at the left.

In addition to the solid com-

fort supplied by quiet, automatic Janitrol heat, installation of the unit and house construction costs were materially lowered by the unique heat distribution system.

Forced warm air is first conducted upward to the attic and then distributed by stacks located in the walls to the under-floor duct system. Special care was given in the duct design to minimize any resistance to air flow.

A more complete description of the construction and operating details of this money-saving, modern heating system is available upon request. Write for the "Kew Gardens Story" and learn how Janitrol can help you sell better home comfort at lower cost



Extremely compact, this 105,000 Btu Janitrol Winter Air Conditioner requires a floor space of less than 22" x 22".

# Janitrol

SURFACE COMBUSTION CORPORATION, TOLEDO 1, OHIO



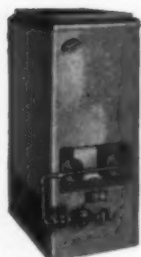
*Rybolt Series 152  
Cast Iron, Coal-Fired Winter Air Conditioner.*



*Rybolt Series RH-76  
Steel Coal-Fired Winter Air Conditioner.*

## *Be Prepared for any Fuel Emergency*

**RYBOLT Coal-Fired Units are Easily Converted to Firing with Gas or Oil, with Little or No Loss of Heating Efficiency**



*Rybolt Cast Iron  
Gravity Furnace  
Gas-Fired*



*Rybolt Cast Iron  
Winter Air Conditioner  
Gas-Fired*

### *New RYBOLT Gas-Fired Units are also available!*

Where your customers have an adequate supply of gas, Rybolt gas-fired furnaces will meet every requirement of heating efficiency, convenience and economy. Unusually compact to conserve space, easy to install and service and thoroughly modern in design and finish, they represent Rybolt quality at its best. Approved by American Gas Association for use with natural, mixed or manufactured gas.

Rybolt coal-fired units, cast iron or steel, can easily and quickly be converted to firing with gas or oil, then back again to coal firing if emergency demands. This is a big selling advantage that gives you real protection in case of fuel shortages.

And these conversions can be made with little or no loss in heating efficiency. Rybolt units are correctly designed to burn all fuels efficiently because ample combustion space and adequate heating surfaces are provided.

The units illustrated above, Rybolt Series 152 and RH-76 primarily designed for hand firing, can also be adapted for stoker firing—another example of their versatility and adaptability to meet every requirement.

For utmost fuel protection, convenience, efficiency and economy, urge your customers to install Rybolt coal-fired heating units.

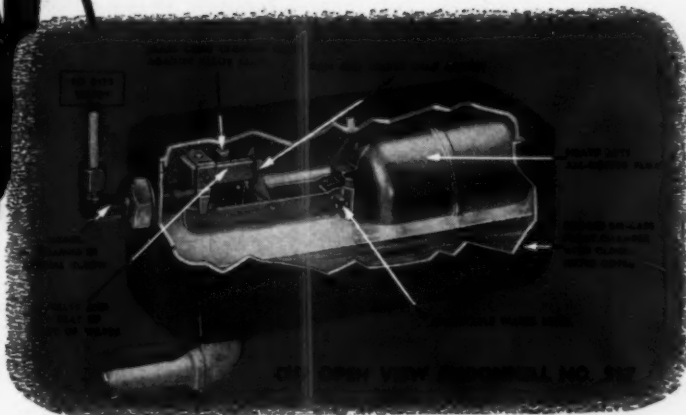


# **THE RYBOLT HEATER COMPANY**

**615 MILLER STREET**



**ASHLAND, OHIO**



## Keep an eye peeled for replacements of humidifier valves ... **IT PAYS!**

A lot of furnace owners are going to find their houses as dry as deserts this winter unless their humidifier pans are equipped with a good, sure-fire float valve.

If you've inspected a few furnace pans, you know how true this is — how many of the old float valves are plugged up or otherwise inoperative. Too often the owner doesn't know about it . . . but he *should* — and pointing out the need for a good, dependable float valve will bring you a lot of good will and some worthwhile extra business.

In the McDonnell Snap Action Float Valve you have a valve that will really get on the job and keep going. It's as different from the old "dribbler" type of float valve as the modern automobile is different from the gas buggy. Just read the facts opposite and you'll know how true this is.

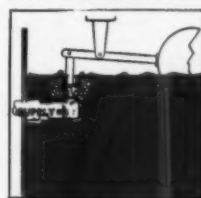
So outstanding is this valve in fact that many furnace manufacturers have made it optional equipment on their units. You can order it with most makes of furnaces, and when you do you assure your customer satisfactory humidifier water level control for years to come. Write for details and surprisingly moderate prices.

**MCDONNELL & MILLER, INC.**  
1318 Wrigley Building, Chicago 11, Illinois

*Doing One Thing Well*  
REG. U. S. PAT. OFF.

# MCDONNELL Snap Action FLOAT VALVE

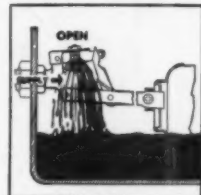
It's the first engineered float valve  
for humidifier pans . . . . .



### ★ NO DRIBBLING ACTION LIKE THIS!

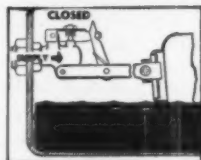
Valves that just dribble water as shown here, don't dribble very long before they clog up with lime and debris.

### ★ INSTEAD OF DRIBBLING, SNAP ACTION LIKE THIS!



An ingenious cam and roller mechanism snaps the McDonnell Float Valve wide open when float falls  $\frac{1}{4}$  inch . . . opens up full stream that flushes out valve and keeps it operative.

### ★ TIGHT CLOSING TOO!



When water level is restored the valve snaps to a tight seal . . . bottle tight against water supply pressures up to 150 lbs. Note also that valve and seat are up out of the water.

And this is only the start of the story. Other features are the provision for adjusting water level; the heavy gauge pure copper float (not just copper plated); the monel strainer as an added protection of the valve. McDonnell Float Valves are available without float chamber (No. 417) or mounted in a sturdy die cast chamber with neat, well-fitted cover (No. 517). One of these is adaptable to any furnace, old or new.



# Timely Tips on Stainless Steel Shop Practices



## SOLDERING

ENDURO Stainless Steel in mill finishes No. 1, 2-D or 2-B will tin very readily with cut acids or stainless steel liquid fluxes. No. 4 or higher finishes first should be roughened with emery cloth or grinding wheel. Half and half solder—50% tin, 50% lead—flows smoothly and adheres to stainless steel, giving a good strong joint. Use a large soldering copper heated just above the melting point of the solder.



## MAKING JOINTS

ENDURO is adaptable to all types of joints. Lock seaming, plain or flush, key lock, standing end, side, folded end or inside lock can be made readily on light gauges. Plain or lap joints can be used where stress is light. On jobs where only butt joints can be used—or for mitered corners—the strapped butt is suggested. It is preferable to tin all edges before bending, then sweat together, adding solder if needed. All soldered sections should subsequently be washed well with alkaline solution to neutralize or remove soldering acids.

## CLEANING

Greasy substances deposited on ENDURO'S satin-smooth surface during fabrication can be removed easily with kerosene, gasoline or naphtha. To remove oily film, sift finely bolted whitening on the surface then wipe with a soft, dry cloth. This brings out the stainless steel's true beauty and lustre. Do NOT use metal scrapers or steel wool.



## PROTECTING SURFACES

Pasting wallpaper, kraft paper or adhesive paper to the entire polished surfaces of ENDURO Stainless Steel sheets protects them from scratches and abrasions. Paper will not interfere with layout and forming, can be removed quickly with hot water or steam. Adhesive tape provides excellent small area protection. Liquid plastics can be either sprayed or dipped, dry rapidly and are easily removed.



These brief tips illustrate the wealth of information contained in Republic's two popular books **THE FABRICATION OF REPUBLIC ENDURO STAINLESS STEEL** and **THE WELDING OF REPUBLIC ENDURO STAINLESS STEEL**. Write for your **FREE** copies. They'll show you how to take advantage of the latest techniques in working stainless steel—put you in line to get your share of this ever-growing business.

## REPUBLIC STEEL CORPORATION

Alloy Steel Division • Massillon, Ohio

GENERAL OFFICES • CLEVELAND 1, OHIO

Export Department: Chrysler Building, New York 17, New York

... AND THE  
**BEST TIP**



ALWAYS  
USE...

*Republic*  
**ENDURO STAINLESS STEEL**



Other Republic Products include Black, Galvanized, Galvannealed and Electro Paintlok Sheets—Tencan Iron Sheets

# TOOL... for clinching SALES



A Master Kraft dealer giving a live demonstration . . . the flashlight can stop or start the spark. Only burner with the new Electronic Control. The prospect can see for himself how and why this new kind of oil burner can save him money.

**DEMONSTRATION** . . . the most powerful sales method for convincing the prospect . . . for closing the sale, regardless of what your competitor has to offer.

This kind of selling is alive—has **PUNCH** . . . will make your selling easier and your sales greater—it is the *third dimension* to selling!

You can't miss making money when you demonstrate—with **Master Kraft**.



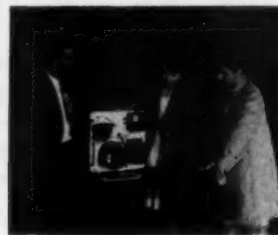
White balls are whirling inside transparent tube . . . showing how Dual-Oxenizer induces a double charge of oxygen to the oil spray.



Demonstrating how and why the new Master Kraft saves oil. Dual-Oxenizer has been removed and white ball inserted . . . ready now for a live demonstration.



Demonstrating the advantages of easy service features — what it means in added comfort — less expense.



Building a wonderful story about the advantages in the Electronic Control . . . demonstrating the reasons why this control is vastly superior to any other oil burner control.



Make \$10,000 with this new line of oil heating equipment . . . make it quick . . . make it now.

Show the superior performance—the sound engineering principles—sell it for replacement of existing burners. It can save one gallon of oil out of every five.

This new line is built for today's market as well as tomorrow's . . . will bring profits to you the year round. Write for **FREE** booklet "How to Make \$10,000" on replacement sales quickly—easily.

**HARVEY-WHIPPLE, INC.**  
MANUFACTURERS  
SPRINGFIELD—MASS

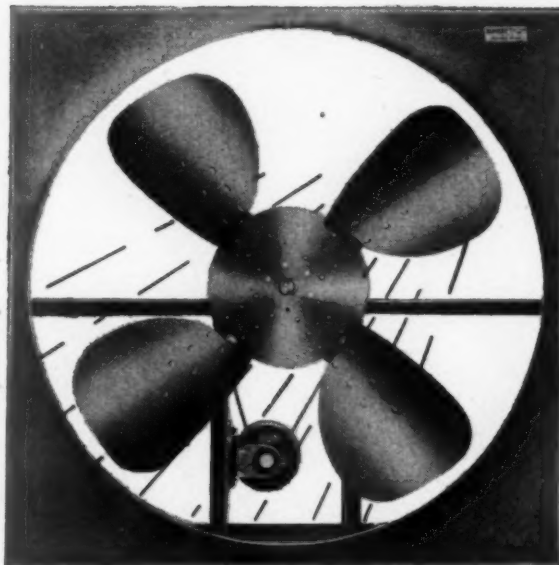
# More PROFITS for You

## SATISFACTION for Your Customers

with

# MURRAY ATTIC FANS

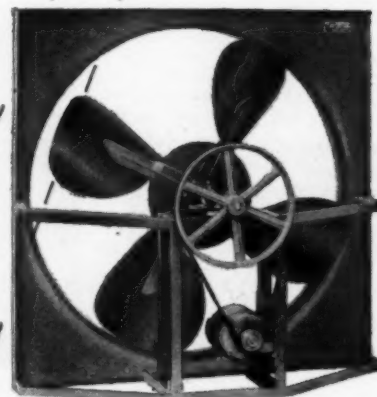
Every Murray Attic Fan installation means more profits for you. Murray Attic Fans are made in our own factories under efficient, controlled processes which enable us to produce a quality fan at a lower price. Because Murray Attic Fans are priced right to meet the demands of your customers, they are easy to sell. Because Murray Attic Fans perform efficiently and quietly at low running cost, you can be sure of having satisfied customers. Fully guaranteed, Murray Attic Fans are manufactured in four sizes to meet all needs. Order Murray Attic Fans through your jobber. Or write us for complete information.



- ✓ Deep, curved flange orifice cuts down air resistance, eliminates noise.
- ✓ Four, broad, deep-pitched blades provide maximum suction and steady flow of air.
- ✓ Resilient base motor and rubber-insulated Oilite sleeve bearing on fan shaft eliminate vibration and operating noise.
- ✓ Economical, quiet operation assures owner satisfaction.



**MURRAY SALES INCREASES** — Write for these free booklets and sales helps. *Installation Manual*: Complete step-by-step installation instructions. *Consumer Mailing Pieces*: Sure-fire, sales-building folders to enclose in your mailings. *Newspaper Ads*: Complete mats furnished, including various fan illustrations and suggestions for use in building your sales.



*"The Fan  
that does its work  
in a Whisper"*

# THE MURRAY COMPANY

ATLANTA, GEORGIA

Established in 1900

DALLAS, TEXAS

# Luxaire's 3 in 1

## AIR CONDITIONING UNIT—

Engineered  
for

**1. COAL**

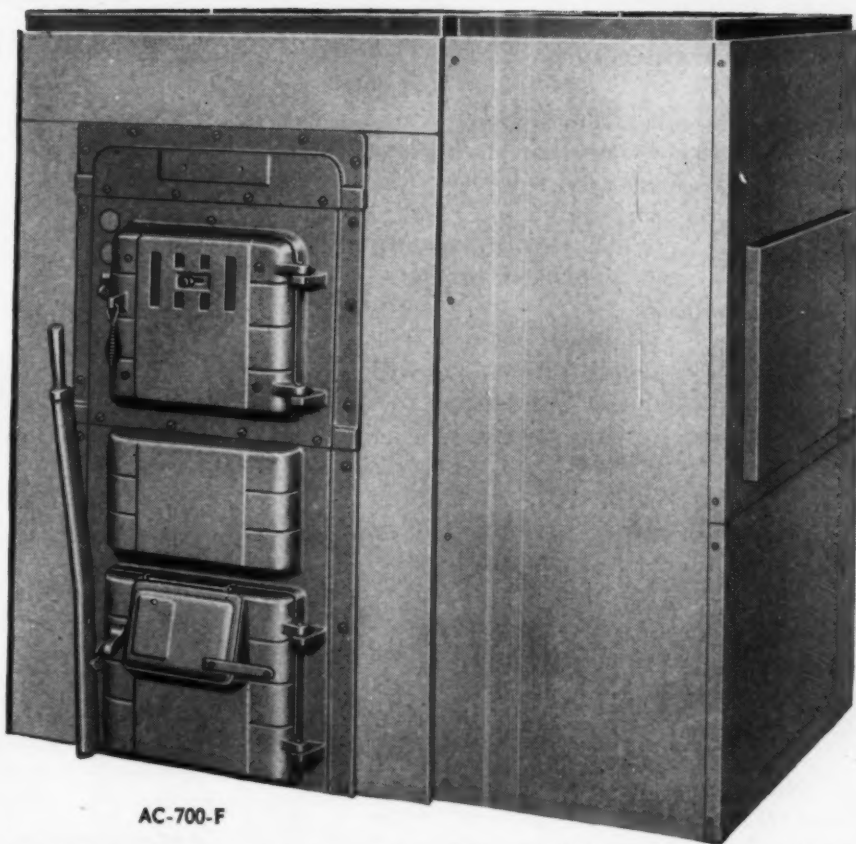
Hand Fired  
Stoker Fired

**2. EASILY CONVERTED**  
and well adapted for

**OIL**

and

**3. GAS**



AC-700-F

There's no evidence that fuel shortages and fuel restrictions are only temporary.

So—Luxaire's "3 in 1 combination" air conditioning Unit is your assurance that you can meet the demands of the home heating market.

Luxaire's "3 in 1" coal unit is designed and constructed so as to provide the necessary requirements and versatility for converting to oil or gas or stoker firing either when installed or at any later date.

The compact, enameled steel cabinet, houses both the heating and blower compartments . . . the rugged, steel heating element with long fire travel and large heating furnace, is welded leak-proof and gas-tight.

For flexible installations, the blower compartment can be assembled at either the right or left side of the heating compartment.

An automatic humidifier is standard equipment. Write for complete information.

THE C.A. OLSEN MANUFACTURING COMPANY

*Luxaire*



HEATING & AIR CONDITIONING UNITS

ELYRIA 12, OHIO

# *The* **MASTER BLOWERTROL** -the *NEW* Thermo-Electric Blower Control for Forced Air Heating & Summer Cooling.

*Continuous* blower operation throughout the heating season is permitted by *Blowertrol*.

*Air Moves* at speeds all the way from full blower capacity down to an almost imperceptible zephyr.

*Smooth and Silent Changes* in velocity are accomplished by altering the blower speed in response to changes in plenum temperature.

*Cool Air* is never permitted to circulate during the heating season except at extremely low velocity.

*Clears Ducts of Cool Air* before sufficient velocity is achieved to cause drafts in rooms.

*For Summer Cooling* *Blowertrol* will operate blower continuously at full speed by just pushing a button.

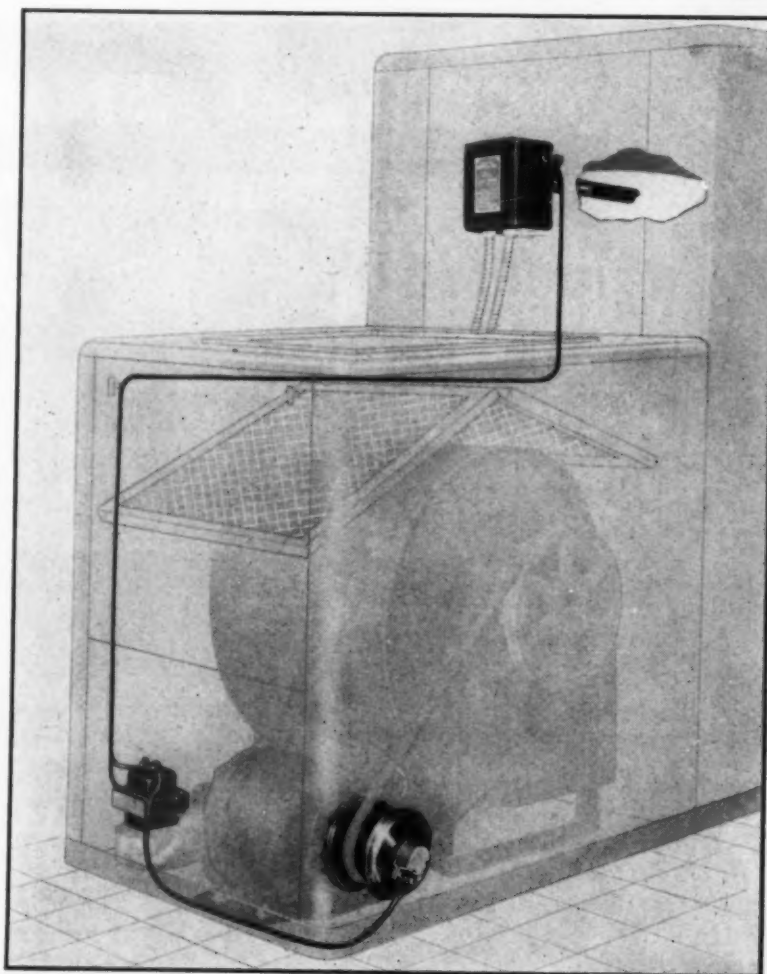
*Constant Temperature*—Maintenance of constant room temperature is greatly facilitated by *Blowertrol*.

*No Cold Zones*—*Blowertrol* avoids cold zones and uncomfortable drafts due to improper warm air circulation.

*In Mild Weather* when little or no heat is required, *Blowertrol* automatically turns the blower motor off completely.

*High Limit Switch* provided with *Blowertrol* may be set to shut down the burner at the desired high limit temperature.

The **MASTER BLOWERTROL** opens up a very large market among owners of modest small homes.



Patent No. 2322405. Other Patents Applied for. Also licensed under Patent 1885048.

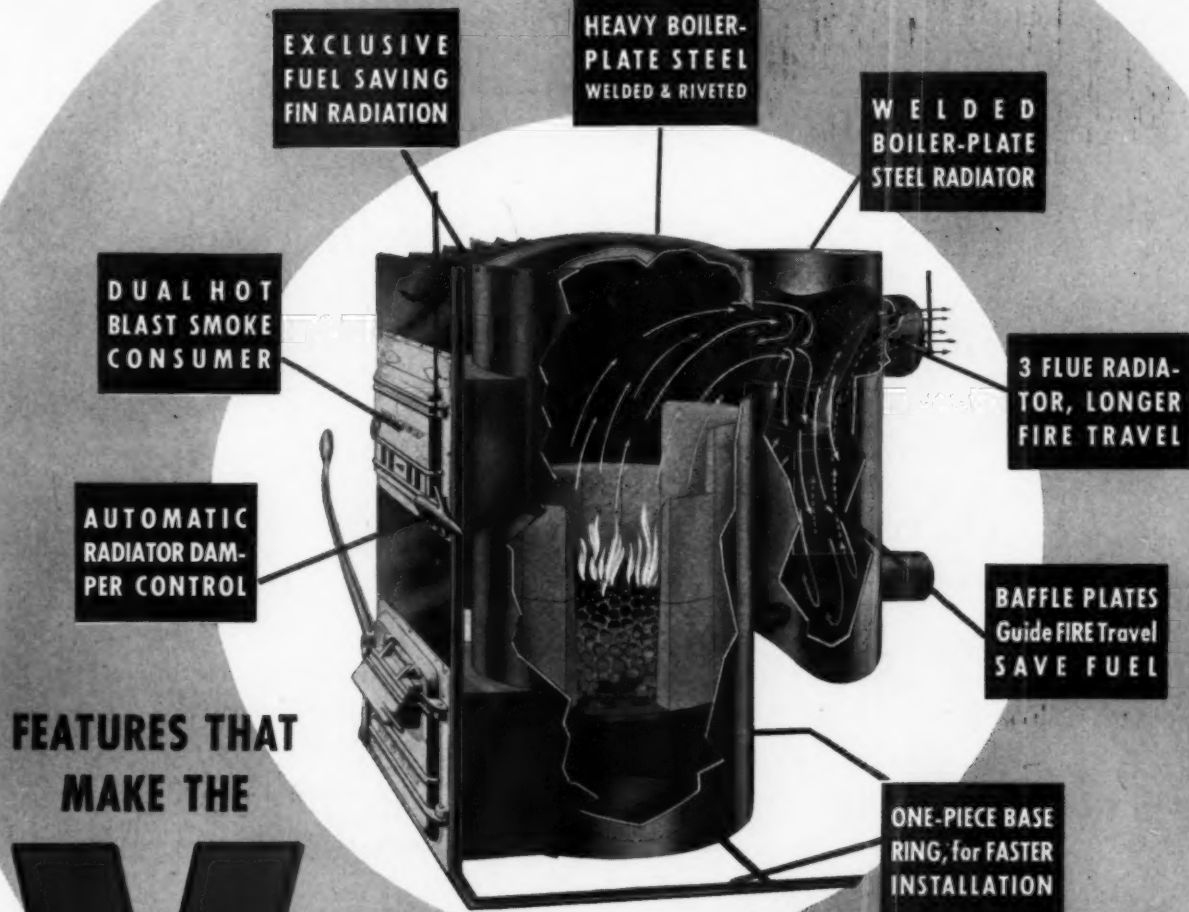
## *The* **MASTER BLOWERTROL**

provides a degree of comfort and general user satisfaction far beyond the capabilities of any conventionally controlled forced air heating system. Yet notwithstanding its truly marvelous performance, its cost is still well within the means of the modest small home owner.

*Full Information Sent Upon Request*

Produced by the mfrs. of **MASTER THERMOSTATIC CONTROLS**—for over a quarter of a Century the Standard of the Industry.

**WHITE MANUFACTURING CO.**  
2362 University Avenue  
St. Paul 4, Minnesota



FEATURES THAT  
MAKE THE

**VICTOR**  
FURNACE LINE MAKE YOU MORE SALES



Twin thermometers prove to your prospect how Victor FINS give more heat from the same amount of fuel. It's simple, honest, and closes sales FAST!

The features shown above, in the VICTOR furnace line, take you out of the competitive class. You sell, not just a furnace when you sell VICTOR . . . you sell years of unsurpassed heating comfort with economical, trouble free operation . . . and, satisfied customers sell more VICTORS for you.

The ideal furnace for conversion from coal to either oil or gas with practically no loss in efficiency.

• • *Investigate* **VICTOR NOW!**

*Write us. New accounts are now being added in new territories. We welcome your investigation and inquiries. The VICTOR line will make YOU money IN 1948.*

FURNACES . . . STOKERS . . . OIL BURNERS . . . GAS BURNERS . . . BLOWERS . . . ACCESSORIES

**HALL-NEAL FURNACE Co.**

VICTOR Quality Furnaces Since 1890

1322 N. CAPITOL AVENUE • INDIANAPOLIS 7, INDIANA

## QUESTION:

---

*How can an oil burner line  
support your business reputation?*

## ANSWER:

---

Your reputation as a heating contractor represents your most valuable business asset. It helps attract prospects . . . increase sales . . . boost profits.

Can an oil burner line support your reputation? You bet it can — if it's Petro! For Petro provides the basic oil burner advantages your customers want:

*Fuel oil economy* — assured by tubular atomization from Petro's patented oil-saving nozzle.

*Heating dependability* — built into every Petro by the world's largest, oldest specialized makers of oil-burning equipment.

*Fine performance over many years* — provided by sound Petro design, engineering and construction . . . based on over 40 years' oil heat experience.

More — Petro's national advertising pre-sells millions of oil burner prospects, including those in *your* locality. Get the facts now . . . from the established heating and plumbing jobber in *your* wholesale trading area who distributes Petro oil burners, boiler-burner units, furnace-burner units, water heaters.



Oil Burners • Boiler-Burner Units  
Furnace-Burner Units • Water Heaters

**PETROLEUM HEAT AND POWER COMPANY • Stamford, Connecticut**

*Makers of Good Oil Burning Equipment Since 1903*

REFINERIES . . . FUEL OIL STORAGE AND DISTRIBUTION TERMINALS  
NATIONWIDE OIL BURNER SALES AND SERVICE FACILITIES

---



DO HARD JOBS  
THE EASIER WAY...

with *Thor*

#### HEAVY-DUTY DRILLS

THOR HEAVY DUTY ½" ELECTRIC DRILL—the original, close-coupled, smaller, lighter half-inch electric drill. No other electric drill of similar size offers such compact power and light weight convenience and high efficiency for continuous service on hard production and maintenance jobs. There's a full range of Thor sizes—a tool for every need—all compactly designed, well-balanced and ruggedly built. For full information ask your nearby Thor Distributor or write for catalog.

#### INDEPENDENT PNEUMATIC TOOL COMPANY

600 W. Jackson Boulevard, Chicago 6, Illinois

Birmingham Boston Buffalo Cincinnati Cleveland Denver Detroit Houston Los Angeles Milwaukee New York  
Philadelphia Pittsburgh St. Louis St. Paul Salt Lake City San Francisco Toronto, Canada London, England

... *Thor* ... **PORTABLE POWER**  
**TOOLS**

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

# If you can make it of steel you can make it better with Stainless

(ESPECIALLY IF IT'S U·S·S STAINLESS STEEL)

Here are three important reasons why it will pay you well to use U·S·S Stainless Steel, and lots of it, in the products and equipment your shop is turning out:—

- (1) Working with Stainless is *profitable*—and it's not difficult, it's just different.
- (2) Your customers will "go" for Stainless because they're fully aware of its superiority.
- (3) Now, when other materials are hard to get, *U·S·S Stainless Steel is available*—for almost immediate delivery.

Everybody likes Stainless. People are willing to pay more for it because they know it is immune to corrosion, is easy to clean, retains its sparkling good looks permanently, and won't wear out. Why not cash in on this popular preference?

*You can obtain U·S·S Stainless Steel—RIGHT NOW*

—in sheets of No. 2B and No. 4 finish; in bars that meet high standards of machinability; plates in sizes up to 120" wide and 360" long; welded and seamless tubing; pipes, angles, channels as well as welding electrodes in all standard grades and specifications.

To make sure of getting what you want, *quickly*—contact your regular supplier, and if he does not carry U·S·S Stainless, phone, wire or write one of the warehouses of United States Steel Supply Company. You'll find one in your city or not far away.



Products you make of U·S·S Stainless, whether for home use as in kitchen sinks, tables and cooking equipment, or for commercial applications like this Stainless-lined vat sell better because they offer greater value.



U·S·S Stainless Steel can be easily and efficiently formed into almost any desired shape—with the same equipment used for forming ordinary steel.



## U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

### UNITED STATES STEEL

AMERICAN STEEL & WIRE COMPANY, Cleveland, Chicago & New York  
CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh & Chicago · COLUMBIA STEEL COMPANY, San Francisco  
NATIONAL TUBE COMPANY, Pittsburgh · TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham  
UNITED STATES STEEL SUPPLY COMPANY, Warehouse Distributors—Coast to coast: UNITED STATES STEEL EXPORT COMPANY, New York



"The Sun Never Sets with MOR-SUN"



*No wonder...*

**MOR-SUN is No. 1**

*on the Heat Parade*

The 100% die-pressed Mor-Sun furnace, a unit of modern design, mass produced in the modern Morrison plant, offers economy of first cost and operation — PLUS beauty!

No wonder Mor-Sun is specified for replacement, modernization and for new construction . . . specified for single homes as well as projects of thousands of homes! No wonder Mor-Sun is NO. 1 ON THE HEAT PARADE!

**SHEET METAL CONTRACTOR** . . . "Mor-Sun comes in an assembled package, ready to set up. That saves me money. And sales appeal! The streamlined Mor-Sun casing makes it easy to convince the home owner that he is getting a truly modern piece of equipment. And it's easy to explain to anyone why the Mor-Sun heat exchanger gives long life and economy. The whole unit is clean, simple, and it looks like a *manufactured* product."

**HEATING ENGINEER** . . . "Mor-Sun engineers have come up with a really modern heat exchanger. Noisy baffles, dirty radiators, and gaskets have been eliminated. There is no counter-flow; therefore no draft problem. The Mor-Sun is rugged and efficient."

**SERVICEMAN** . . . "Mor-Sun has good burners and controls, but, further than that, Mor-Sun has construction features that reduce possibility of burner failure."

**HOME OWNERS** . . . "We wanted a playroom in our basement but we were worried about how we could hide or camouflage the furnace. One look at the Mor-Sun — and our problem was solved! It was an added pleasure to learn from a neighbor that the Mor-Sun, in addition to being beautiful, quiet and economical—is within our budget."

**MORRISON**  
STEEL PRODUCTS, INC.  
BUFFALO 7, N. Y.

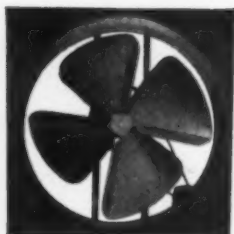
Since the introduction of the post-war MORRISON die-pressed Steel Furnace . . . completely new from stem to stern . . . it has zoomed to universal popularity . . . POPULARITY THAT HAS BEEN EARNED!

# SCHWITZER-CUMMINS FANS and BLOWERS

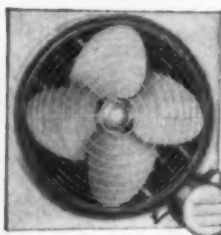
*give  
you*

## AIR HANDLING AT ITS QUIETEST BEST

You will need the best there is in quality, performance and design in your merchandise for 1948, and all at a reasonable price. With prices what they are, you must have convincing value to offer. Schwitzer-Cummins Fresh-Air Maker fans and Hy-Duty blowers can't be beat for big air delivery, quiet operation, selling features and looks. You will like everything about them and will cheerfully O.K. this year's prices. And there are a surprising number of essential types and sizes to help you get the business and boost your profits.



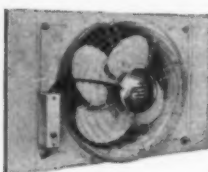
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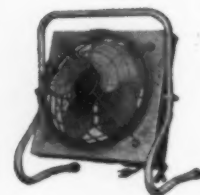
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3



4



5



6

① ATTIC VENTILATORS

④ ADJUSTABLE WINDOW FANS

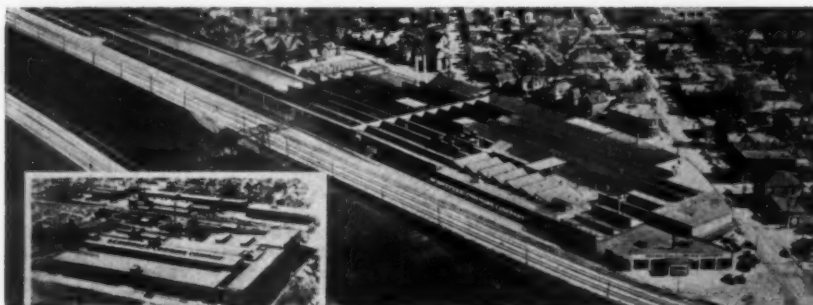
② WINDOW FANS

⑤ PORTABLE CIRCULATING FANS

③ EXHAUST FANS

⑥ DOUBLE INLET BLOWERS

With our enlarged facilities we can now give good service to more dealers and distributors and have some prime territory open. We would like to present a portfolio of new literature descriptive of some very unique and interesting developments for this year's ventilating business. It is yours for the asking.



### SCHWITZER-CUMMINS COMPANY

VENTILATING DIVISION

1145 EAST 22nd STREET • INDIANAPOLIS 7, INDIANA

ENGINEERS AND MANUFACTURERS OF FINE FANS FOR 30 YEARS

# Which Comes First A GOOD FURNACE OR A GOOD INSTALLATION?

## A MESSAGE FROM B. F. LAGERBORG

While we are quick to claim that a good furnace is essential to good heating we are also quick to maintain that a first class installation is just as important. Even the best furnace requires correct installation if it is to give lasting, economical service.

We at Premier are doing everything possible to insure expert installation of our high quality heating equipment. That is one reason why we limit the sale of the Premier Line to Independent Heating Dealers only. In our opinion, the Independent Heating Dealer is best qualified to install warm air heating systems.

For more than twenty-seven years Premier catalogs and advertising have stressed the importance of a properly designed, properly installed heating system. We have consistently featured the Independent Heating Dealer in all of our consumer advertising by urging the buyer to make sure that he gets a first class installation by buying from his Independent Heating Dealer.

To make the job of designing good installations easier, The Premier Engineering Department works closely with all of our Dealers. Field Engineers advise Dealers on all unusual heating problems. Factory Engineers draw individual plans for Dealers when required.

Because we know that the furnace and the installation are equally important, we are more determined today than ever before to uphold our more than a quarter-century-old policy of promoting and supporting the Independent Dealer. To this end, we are further strengthening our program with new and greater selling, engineering and advertising helps for Premier Dealers.

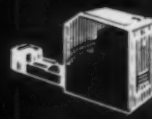
If you investigate you'll agree that the Premier Dealer Plan truly keeps the Independent Dealer INDEPENDENT!

*B. F. Lagerborg*



B. F. Lagerborg  
President, Premier Furnace Co.

**PREMIER FURNACE COMPANY**  
DOWAGIAC, MICHIGAN



# Get these 4 advantages with **FIBERGLAS\* MOP YARN**

1. Can't char or burn

2. Provides longer life

3. Remains uniform longer

4. Spreads smoothly and evenly

Whether you want ready-made mops or make up your own, you can get the advantages of Fiberglas Mop Yarn.

Fiberglas Mop Yarn will not burn or char when dipped in hot asphalt or pitch. Experience shows *it lasts up to 15 times longer* than organic mop yarn.

Mops, which have been previously used, "thaw out" in two or three minutes without being harmed.

They're easier to use because mops made with Fiberglas Mop Yarn stay uniform in size longer than mops that break down from heating or burning; it's not necessary to mop back and forth to compensate for reduced spreading action. And they spread "hot stuff" smoothly and evenly, as the ends of the yarn flay out.

For full information, get in touch with your Fiberglas Mop Yarn Distributor, today, or write Owens-Corning Fiberglas Corporation, Department 930, Toledo 1, Ohio. Branches in principal cities.

In Canada: Fiberglas Canada Ltd., Toronto, Ontario.

OWENS-CORNING  
**FIBERGLAS**

**MOP YARN**

\*Fiberglas is the trade mark (Reg. U. S. Pat. Off.) for a variety of products made of or with glass fibers by Owens-Corning Fiberglas Corporation.



Mop made by Kirby Industries, Los Angeles, complete with Fiberglas Yarn



Mop made by Frank P. Frey Co., Chicago, complete with Fiberglas Yarn



Mop made by A. G. Brauer Supply Co., St. Louis, complete with Fiberglas Yarn



Mop made by Nelson Mop Co., Chicago, complete with Fiberglas Yarn

**Other Manufacturers:**

Lexington Supply Co., Cleveland, Ohio  
Miracle Mop Co., Westmount, N. J.

**There is no problem  
in sheet or strip fabrication  
that is completely new to  
**WEIRTON****

Change your product design, change your dimensions, change your finish—and you have created a new problem in steel. But we have solved so many like it, there is hardly any doubt that we can solve yours.

Your problem in buying steel, when put up to Weirton, gets attention from those within our organization best qualified to give you the right answers.

Our specialists see eye-to-eye with you and look at your problem from your side of the desk. First, they serve you. Then they serve Weirton. Only in that way can you get what you hope for . . . real help on your steel problem.



**WEIRTON STEEL CO.**

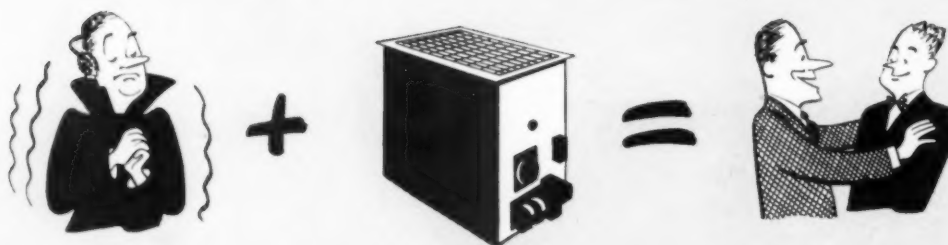
WEIRTON, W. VA.

Sales Offices in Principal Cities

Division of **NATIONAL STEEL CORPORATION**

Executive Offices, Pittsburgh, Pa.





## Cold customer + Kresky Furnace = Warm friend ...and a nice profit for you

Install the KRESKY *Evenbeat* Oil Floor Furnace in the new or remodeled homes of your customers and they're sure to tell others that you certainly "did right by them." And that sort of thing snow-balls, you know. The Kresky *Evenbeat* is one of the most popular oil furnaces on the market today, and here are a few reasons why:

### Low initial and operating cost

The famous patented Kresky burner, basic unit of *Evenbeat*, is simplicity itself, allowing us to effect many savings in manufacturing costs—savings we pass on to you. Immediate heat from a fire that is *always* clean—soot free—and hot, assures warmth when you want it—and less oil consumption.

### Very easily installed

A Kresky *Evenbeat* floor furnace is almost a plug-in unit, it's that easy to install. Requires only three feet of clearance under the floor—less than any other comparable heater.

### Always clean instant heat

Air is mixed with the gases from the oil in the burner in just-right amounts by an electrically operated blower to give instantaneous clean heat, which is then forced through the home by a circulating fan.

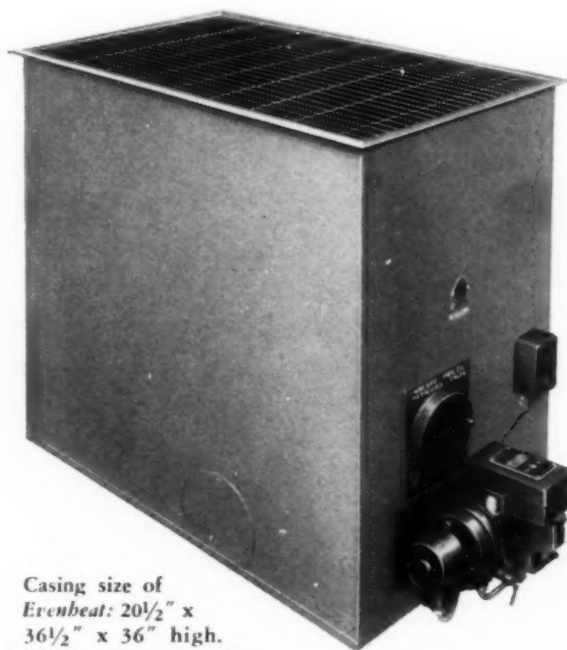
### Safe as safe can be

The Kresky *Evenbeat* is completely enclosed in a double casing separated by adequate air space. This insulates the furnace, keeping the outside casing cool—an important safety feature.

### Automatic and really rugged

Intake of oil and air induction are so synchronized that you get clean healthful heat in amounts you want when

you want it without the slightest bother. The best of heavy gauge steel and the finest of materials, plus the famous Kresky workmanship is your guarantee of long life and complete customer satisfaction.



Casing size of  
*Evenbeat*: 20½" x  
36½" x 36" high.  
BTU output, 72,800.

Shipping weight, 237 lbs. Also comes in dual register and super models. Write for our 1948 catalogue for information about our full line of commercial and domestic ranges and furnaces. Increased plant facilities allow us to make faster deliveries on all models.

#### NOTE TO DEALERS

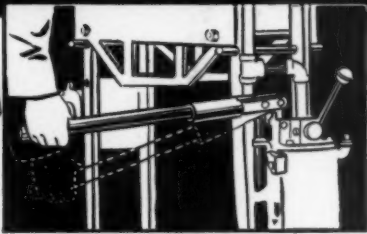
If you are interested in a dealership, please let us know. There may be an opening in your locality.



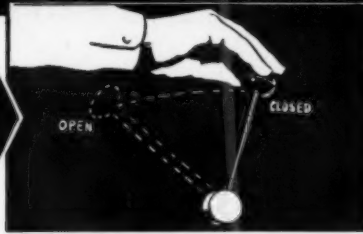
Dept. AA

**KRESKY MFG. CO., INC.**  
Petaluma, California

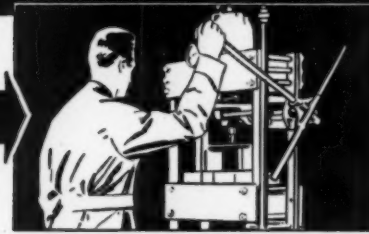
# These **KRW** Hydraulic Arbor Press Features...



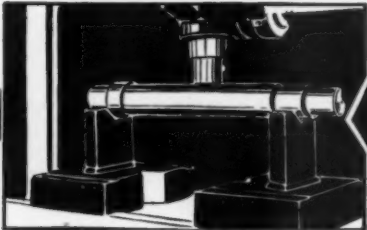
**Fast Action**, cylinder is filled as ram travels to work. You get tons of pressure with first pump stroke.



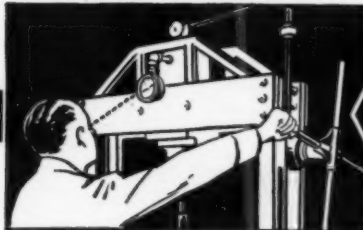
**Finger Tip Control** opens and closes valve in a jiffy. No gripping effort assures easier, faster operation.



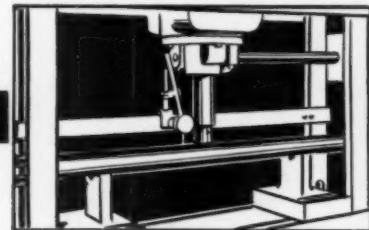
**KRW Built-in Mechanical Press** permits up to 3 tons pressure for straightening small diameter work.



**One Piece, All Steel V-Blocks** have machined surfaces for greater accuracy; usable upright or inverted.

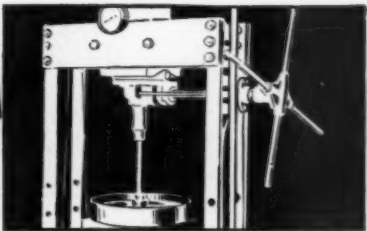


**Highly Visible Pressure Gauges** are mounted where they can be quickly checked. Read in tons and pounds.

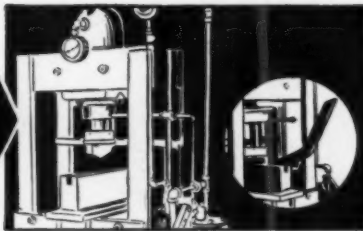


**Micrometer Dial Attachment** permits great accuracy in checking work without removing from V-block.

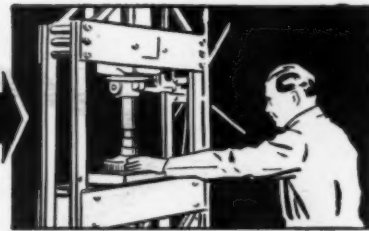
## Reduce Costs ON THESE AND OTHER DAILY Production Jobs...



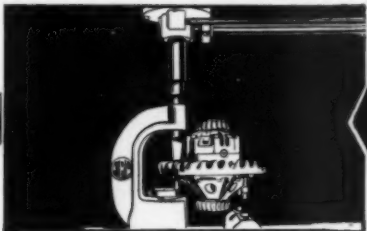
**Broaching** a key way in a flywheel. 7½ inch ram travel makes many broaching jobs practical on KRW Presses.



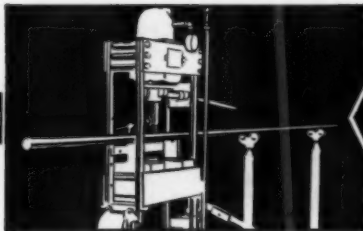
**Bending** in production lots with simple, inexpensive dies is easily done on low-cost KRW Hand-operated Presses.



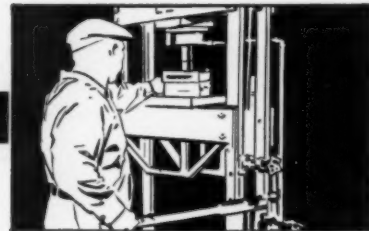
**Pressing** of all types is efficiently handled. Adjustable bed makes pressing on long shafts a very simple operation.



**Riveting** with KRW Riveting Attachment is simplicity itself. Many KRW Presses are used for this type work.



**Straightening**, especially on long work, is easy on a KRW Press because of its special open-end construction.



**Blanking** is easy with simple die set for short-run operations. Releases regular equipment for quantity production.

Write for the  
**NEW  
KRW  
Catalog.....**



# K·R·WILSON

15 MAIN STREET, BUFFALO 3, N. Y.

K. R. WILSON, 215-217 Main St., Buffalo 3, N. Y.

Please mail me a copy of your  
Hydraulic Arbor Press Catalog

Name .....

Address .....

City ..... Zone ..... State .....

We Honor  
and Congratulate  
The MANUFACTURERS  
and WHOLESALERS  
of the Heating and  
Air Conditioning Industry

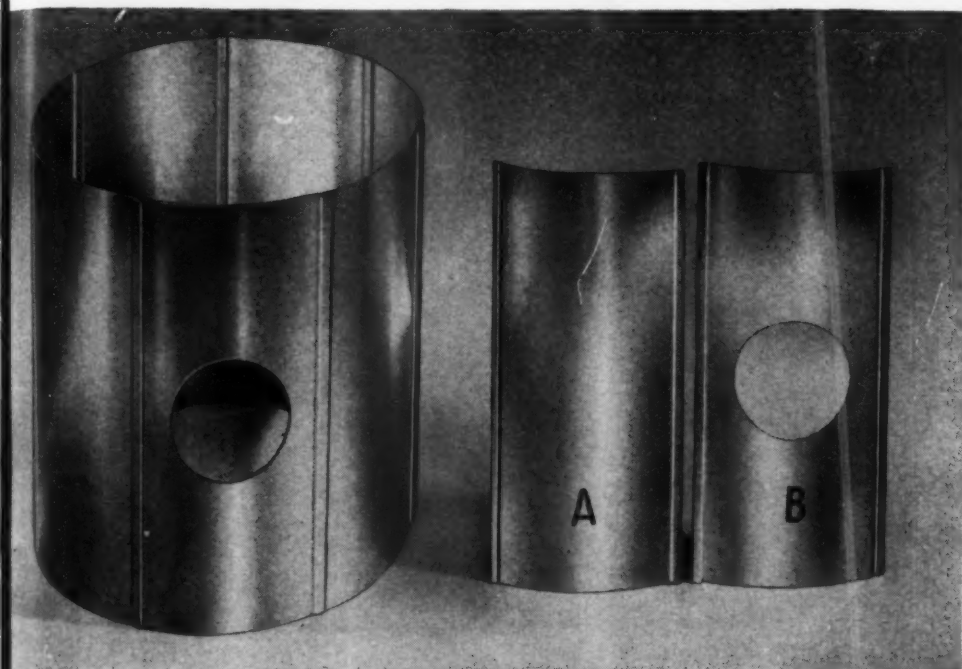
Through their ingenuity, untiring efforts and resourcefulness, they have supplied sufficient and dependable Equipment and Materials to the

CONTRACTORS AND DEALERS  
of the INDUSTRY

making possible continued growth  
and prosperity.



# NEW! REVOLUTIONARY!



Patent Applied For

HEAT-RESISTANT  
STAINLESS STEEL

## PANELOX

COMBUSTION CHAMBER  
FOR OIL BURNERS

### Gives You All These Advantages

**MORE SALES • BETTER NET PROFIT • EASIER INSTALLATIONS  
LESS TIME REQUIRED PER JOB • SMALLER STOCKS  
GREATER CUSTOMER SATISFACTION**

### Gives Your Customers What They Want

Take a good look at the new Heat-Resistant Stainless Steel PANELOX Combustion Chamber. You're seeing the most amazing and efficient combustion chamber ever developed for domestic oil burners. It looks simple—and it is. Yet years of engineering experience—years of scientific experiment with designs and materials—went into its development. Check its features and advantages—see for yourself why it's in a class by itself. Then write, wire or phone for prices and further details.

**PROVIDES INSTANTANEOUS COMBUSTION.** The new, amazing PANELOX Combustion Chamber reflects heat instantly—heats up in seconds. No minutes-long warm-up period. That means complete, efficient combustion the minute the burner comes on. Customers like that.

**ELIMINATES "BLOW-TORCH" STARTING ROAR**—Cause of most oil burner noise complaints. Proper combustion, *right from the start*, is what does the trick. Customers like that.

**ELIMINATES TURBULENCE NOISES** during burner operation. No dead air spaces, no rough surfaces, to set up noisy flame turbulence. Customers like that, too.

**PAYS FOR ITSELF** in fuel savings. Instant combustion means less heat up the chimney—more heat *doing a heating job*. More BTUs from every gallon—fewer gallons required. Customers like that.

**ELIMINATES SMOKE, SOOT AND OILY FILM** caused by inefficient combustion. Proper burning means *clean* burning. And customers like that.

**PROVIDES BETTER ROOM TEMPERATURE CONTROL**—by eliminating override. Burner starts heating as soon as it comes on. No wide variations in room temperature due to override. Customers like that.

*Inquiries invited from Manufacturers' Agents.  
Several good territories still open.*

## STEFECO STEEL COMPANY

HEATING EQUIPMENT DIVISION • MICHIGAN CITY, INDIANA

Check These Outstanding  
**PANELOX**  
Features



**HEAT-RESISTANT STAINLESS STEEL.** Highest in chromium content, it is exceptionally heat- and corrosion-resistant. Not affected by sulphur-bearing oil. Withstands temperatures up to 2150°F. Thoroughly tested and proved under actual operating conditions.



**ONLY TWO TYPES OF INTERLOCKING PANELS.** With the two types of panels shown, you can speedily form any size or shape chamber required. "A" panels are standard. "B" panels have openings to accommodate 4-in., 5-in., or 6-in. burner guns. Panels are 6¼ in. by 14½ in.



**INTERLOCKING SEAMS PREVENT WARPING.** Note how the panels interlock at the seams—an exclusive feature with the PANELOX. Easily joined by sliding one interlocking edge over another. Those interlocking seams add great rigidity and structural strength. And see that clean interior? No dead spaces there to cause operating noise.



**LIGHT IN WEIGHT—EASY TO HANDLE—NO BREAKAGE.** Panels required for the average combustion chamber weigh only about 8 pounds. And the panels nest together so they're easy to handle. No breakage in shipment, handling or installation.



**NO BACKFILL INSULATION! NO CEMENTING! NO TOOLS!** Installation couldn't be easier. No tools required in assembling and installing. No backfill insulation or refractories needed. No cementing of any kind. Speeds up every job—cuts labor cost way down.

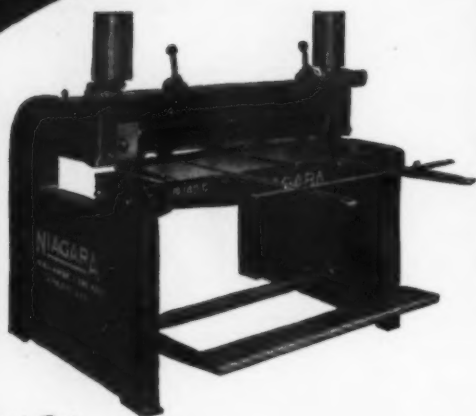


**LOW INVENTORY—LOW FREIGHT COST.** No need to stock several sizes. The two types of panels make any size or shape combustion chamber. And the light weight means exceptionally low shipping cost.

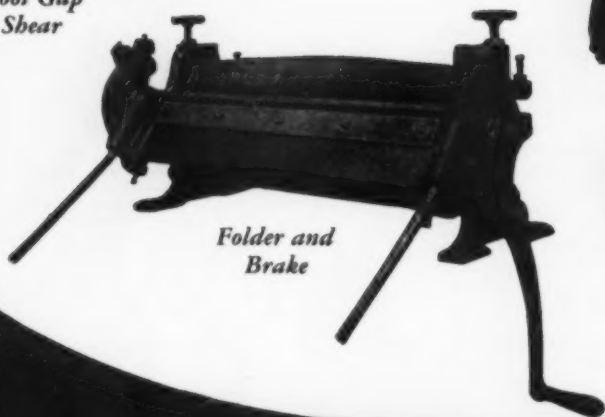
# NIAGARA

*America's Most Complete Line of Tinner's Tools, Presses, Shears, and Machines for Plate and Sheet Metal Work*

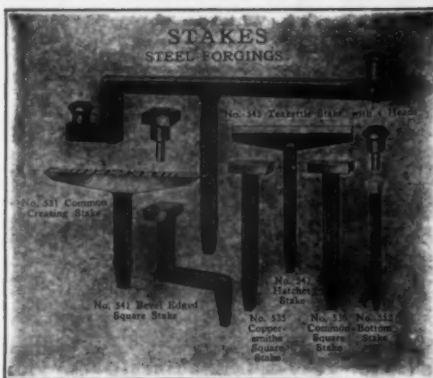
• Modernize your shop for today's new materials and conditions. The hundreds of tinner's tools and machines in the complete Niagara line provide economical, productive and durable equipment for every job in your sheet metal shop. Hand, foot and power operation offer low first cost, low production cost and low maintenance cost. Write for catalogs.



Foot Gap Shear



Folder and Brake



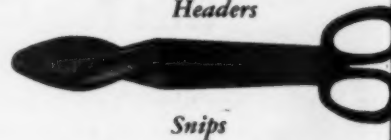
Hand Groovers



Hollow Punches



Rivet Sets and Headers



Snips



**NIAGARA MACHINE AND TOOL WORKS**  
**683 NORTHLAND AVENUE** **BUFFALO 11, NEW YORK**  
*District Offices: New York - Cleveland - Detroit*

FOR  
AMERICAN



FOR H  
AMERICAN

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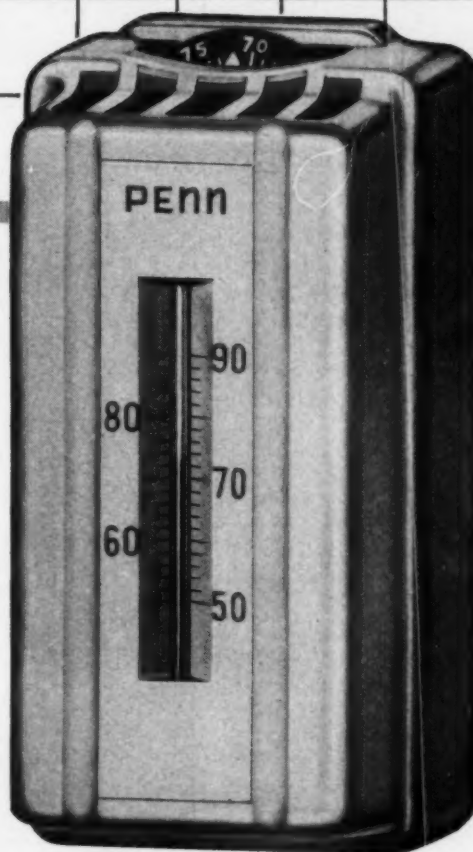
ORK

FOR  
AMER

BOTHERED BY "COLD 70" COMPLAINTS?



**Switch to PENN**  
for dependability - accuracy!

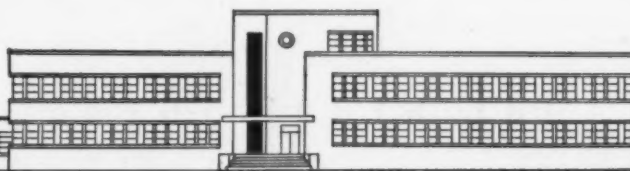


**H**HEAT ANTICIPATION does it! This Penn feature which introduces "artificial" heat within the thermostat, holds temperatures closely to the selected level; avoids the wide swings which cause discomfort and fuel waste.

"Haven't had a 'Cold 70' complaint since I switched to Penn," many dealers tell us. And now Penn Temtrol... the heat-anticipating thermostat... has another feature that will appeal to your customers—a new, easy-to-read face that eliminates squint.

For accuracy and dependability, switch to Penn. **Penn Electric Switch Co., Goshen, Indiana.** Export Division: 13 E. 40th St., New York 16, U.S.A. In Canada: Penn Controls, Ltd., Toronto, Ontario.

**PENN**



**AUTOMATIC CONTROLS**

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

# SALES???

## *unrestricted*

with **MONCRIEF'S** *"all Fuels"*

### AIR CONDITIONING UNIT

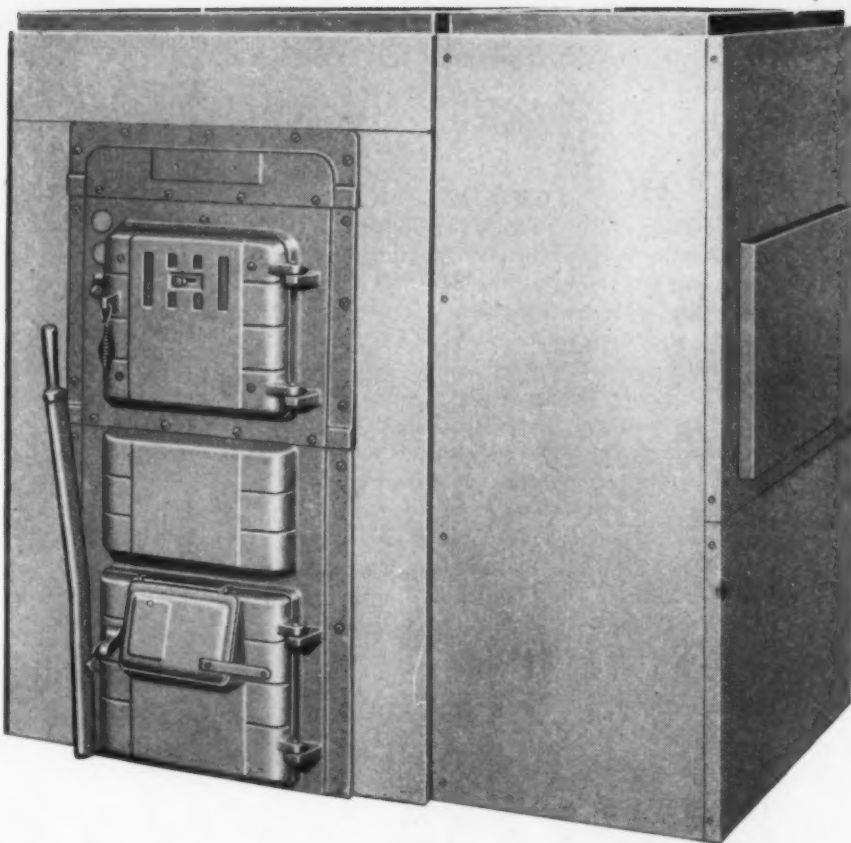
Gas? Oil? Coal? Stoker Fired?—any of these jobs are within your reach with Moncrief's new "all-fuels" air conditioning unit.

Here's a new design in a coal-fired air conditioning unit that can be readily converted at any time, even after installation, to burn oil, gas or for stoker firing.

The excellent design and construction of the rugged, steel heating element, with long fire travel and large heating surface provide the necessary qualifications for the versatility of this unit.

A new cabinet that allows the full height blower compartment to be assembled at either side, is finished in smooth, glossy baked enamel.

Abundant air circulation is provided by the large, silent operating blower. Large filter area assures a long period of air cleaning without frequent replacement of filters. An automatic humidifier supplies the necessary moisture.



**THE HENRY FURNACE COMPANY**

Medina, Ohio

HEATING AND AIR CONDITIONING UNITS

**MONCRIEF**

SINCE 1895

FURNACE PIPE AND FITTINGS

THE CHOICE OF

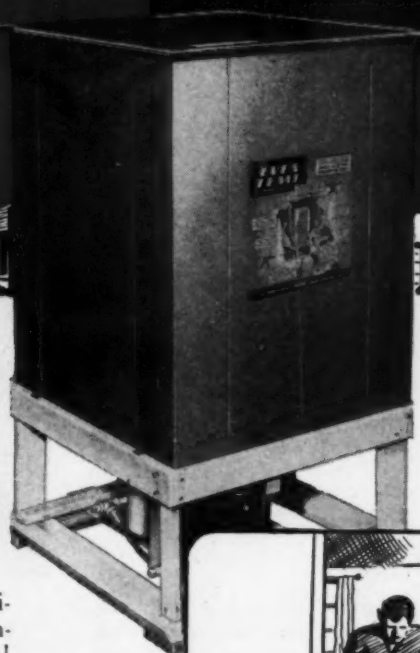
*Experience*

NORWESCO  
**EVEN  
TEMP**  
OIL FLOOR FURNACE

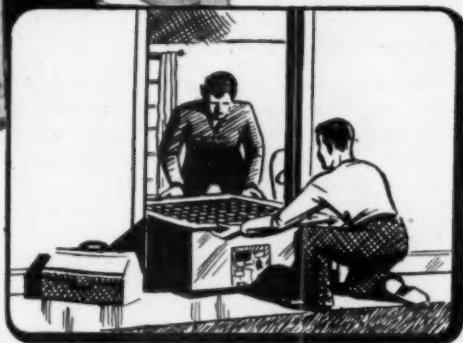
ANOTHER *Automatic*  
**EVEN TEMP**  
OIL FLOOR FURNACE

BEING INSTALLED HERE

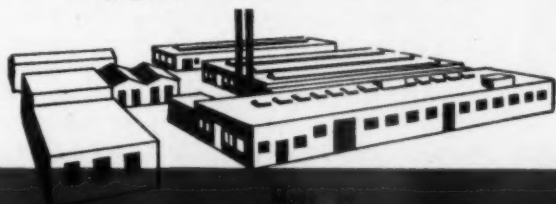
by  
**BOB KANZE CO.**  
2141 N. ILLINOIS WA. 5069  
*24 years in automatic heating*



Like hundreds of other experienced heating dealers, this Indianapolis firm features Even-Temp Oil Floor Furnaces! Their reasons? Even-Temp is more efficient, better made, easier to install, and gives better performance than any floor furnace they ever sold! There are lots of other reasons, too, all of them to the advantage of Even-Temp dealers. Begin now enjoying the sales and profits that can be yours with Even-Temp. Write today for full information.



Even-Temp is a complete packaged unit, wired and assembled, ready to install. Requires minimum floor space, minimum installation time, minimum servicing. Even-Temp floor furnaces as well as space heaters, are available in a complete range of sizes.



Name Address  
Dept. A

**NORTHWEST Metal PRODUCTS Inc.**  
MANUFACTURERS • • • • 85 SPOKANE ST. • • • • SEATTLE 4, WASHINGTON, U.S.A.

# What are your competitors doing about shortages?

A whale of a lot of them have converted to Kaiser Aluminum . . . and are *staying* converted.

But don't take our word for it. Read a few of their quotes, as reported by our men in the field.



## 2. APPLIANCE MANUFACTURERS SAID:

"Nobody had to sell us on aluminum having plenty of customer appeal, but we were afraid of the cost. However, we found that on a unit cost basis, aluminum is just as cheap or cheaper than any other metal. Besides, we saved money on handling and shipping. We've converted to Kaiser Aluminum for keeps."



## 1. STOVE MANUFACTURERS SAID:

"When we converted to sheet aluminum for our gas range griddles, we were afraid consumers would object to its lightness. Turned out they preferred it because it's a better heat conductor and has a fine appearance. That's why we're sticking with Kaiser Aluminum."



## 3. MANUFACTURERS OF HEATING AND VENTILATING EQUIPMENT SAID:

"When we switched to Kaiser Aluminum, our workers were enthusiastic. They liked its lightness, its cleanness, and above all, its workability. What's more, our customers found aluminum duct work far more efficient. We wouldn't think of changing back."

# Kaiser Aluminum

a Permanente Metals product

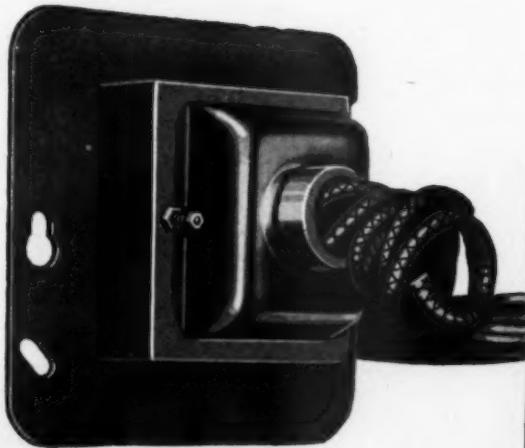
### What about you?

Why wait when there's a Kaiser Aluminum alloy to meet almost every type of manufacturing operation? Why not join the more than 1,000 manufacturers who today are making more than 600 different products out of Kaiser Aluminum?

Simply call in a Permanente Metals' sales engineer and we'll be on the job, for *you*!

PERMANENTE PRODUCTS COMPANY, KAISER BUILDING, OAKLAND 12, CALIFORNIA . . . WITH OFFICES IN:  
Seattle • Oakland • Los Angeles • Dallas • Wichita • Kansas City • St. Louis • Atlanta • Minneapolis • Milwaukee • Chicago  
Cincinnati • Cleveland • Detroit • Boston • Buffalo • New York City • Philadelphia • Washington, D. C.

# T-23 OIL HEATING PACKAGE SET

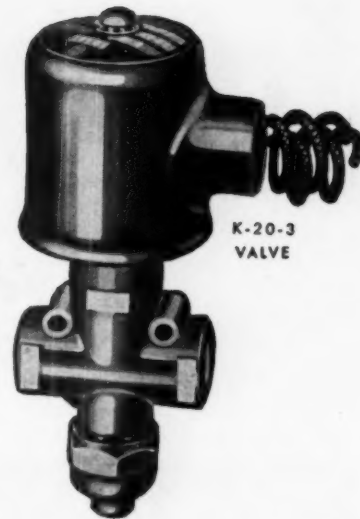


T-O TRANSFORMER



T-770 THERMOSTAT

THERMO.  
CABLE



K-20-3  
VALVE

*Automatically Yours For Better Temperature Control*



**GENERAL**

801 ALLEN AVENUE

**CONTROLS**

GLENDALE 1, CALIF.

FACTORY BRANCHES: BIRMINGHAM (3) BOSTON (16) CHICAGO (5) CLEVELAND (15) DALLAS (2)  
DENVER (10) DETROIT (8) HOUSTON (2) KANSAS CITY (2) NEW YORK (17) PHILADELPHIA (40)  
PITTSBURGH (22) SAN FRANCISCO (7) SEATTLE (1) \* DISTRIBUTORS IN PRINCIPAL CITIES

WRITE FOR FREE DESCRIPTIVE LITERATURE



Newspaper Rotogravure



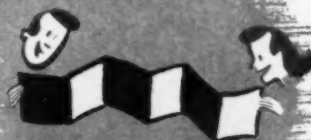
Radio



Broadsides



National Magazines



Line Folders



Consumer Booklets



Dealer Co-Op Program



Building Signs and Decals

**now**

**MORE THAN EVER BEFORE**

**IT'S THE**

# Century

**for oil heat!**

**We're Telling All America with a Smashing New  
PROMOTIONAL CAMPAIGN BUILT AROUND THE CENTURY DEALER**

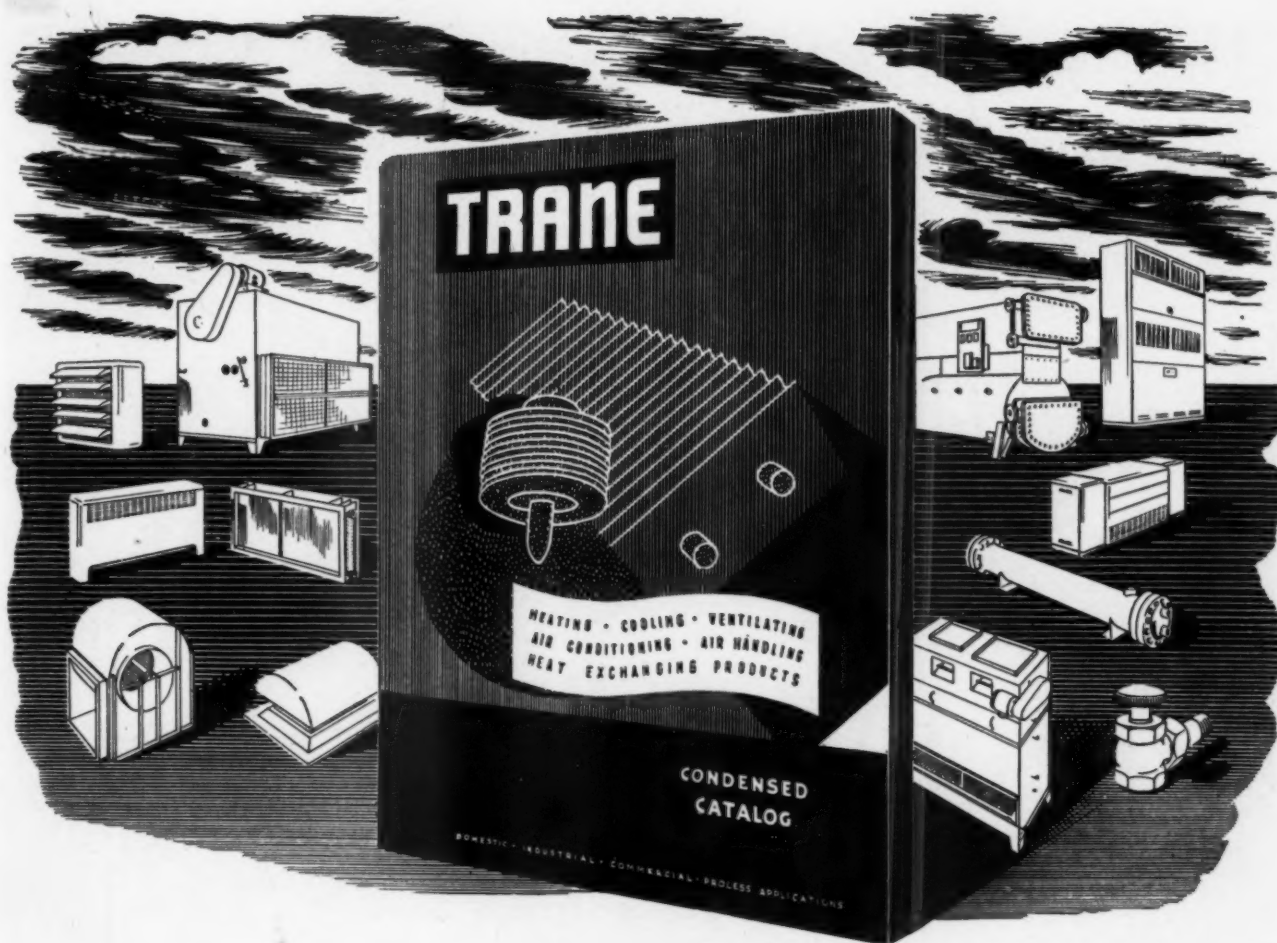
## Dealers

Over 20 years of precision manufacturing has meant constantly improved efficiency of Century Oil-Fired equipment. Join the procession of new Century dealers... Write today to Century Engineering Corporation, Cedar Rapids, Iowa.

**CENTURY**  
**ENGINEERING CORPORATION**  
CEDAR RAPIDS, IOWA

• *Century is stepping out in '48 . . . with the most compelling advertising campaign in its history . . . to step up profit for every Century dealer, building consumer confidence in every Century product. Century offers you a complete NEW line in 1948. Burners, Furnace Units, Boiler Units and Water Heaters all manufactured in the Century plant at Cedar Rapids. There's no doubt about it now... IT'S THE CENTURY FOR OIL HEAT!*

OIL BURNERS • BOILER BURNER UNITS • WATER HEATERS  
HUMIDIFIERS • WARM AIR FURNACES • AIR CONDITIONING



## More and More Jobs Need Heating *and* Cooling ... BE READY TO HANDLE *Both*...WITH TRANE PRODUCTS

Job after job now calls for both heating and cooling. Since the functions are so closely allied, often being accomplished with much of the same equipment, heating and air conditioning *must* be considered together.

Architects, engineers, and owners prefer a minimum of contracts and responsibilities — so the contractor who can bid on the whole job has a much greater chance of getting it. The contractor who cannot bid on the whole job may likely lose it to one who can.

Heating and air conditioning are so closely related, from figuring the job through installing it, that it is only logical for the contractor to grow with the industry by combining heating and air conditioning. In this way, the contractor has peak business the year around, and is assured of a steadily increasing market

in remodeling and modernization work, as well as in new construction. Just as the contractor needs both heating and air conditioning to make his service complete, the heating and air conditioning industries need additional contractors so that they can expand to meet the enormous demand.

Trane is the ideal source of supply for the independent contractor who combines heating and air conditioning. The complete Trane line includes every necessary product for entire heating and air conditioning systems — giving the contractor the undivided responsibility of *one* manufacturer. Trane field engineers in 85 field offices are constantly available for help and advice in any phase of heating and air conditioning.

# TRANE

Manufacturing Engineers of Equipment for  
HEATING AND AIR CONDITIONING

THE TRANE COMPANY, LA CROSSE, WISCONSIN • Also TRANE COMPANY OF CANADA, LTD., TORONTO, ONTARIO



ANY FIRING RATE FROM PILOT TO HIGH FIRE, AS SMOOTHLY AS A MOTION PICTURE



# The BREESE HORIZONTAL BURNER WITH

*Rheotrol* ★

NOW MAKES MANUAL CONTROL PRACTICAL

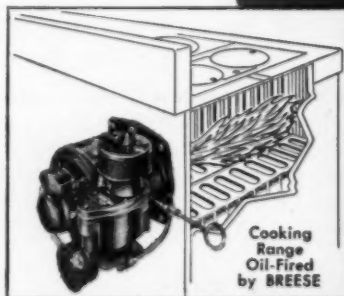
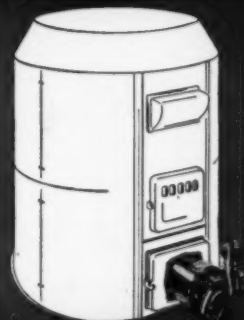
FOR WARM AIR AND HOT WATER HEATING SYSTEMS, COOKING RANGES AND MANY OTHER APPLICATIONS WHERE STEADY FIRING IS DESIRABLE.

THE RHEOTROL synchronizes air and oil adjustment, providing maximum combustion efficiency at all firing rates. Modulated flame means a steady flow of economical heat . . . NO COLD 70.

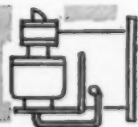
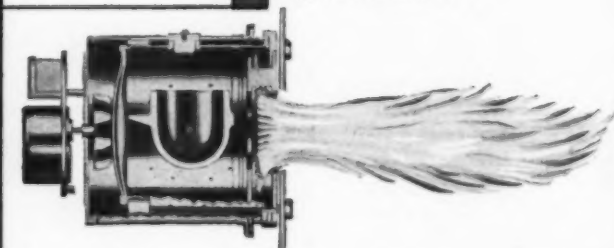
Write today for descriptive literature and technical data.

Automatic, thermostatically-controlled models also available for heating and many other applications.

★ TRADE MARK



Cooking Range Oil-Fired by BREESE



## BREESE BURNERS inc.

341 EAST OHIO STREET CHICAGO 11, ILL.

FORMERLY OIL DEVICES

RESEARCH AND ENGINEERING  
SANTA FE, NEW MEXICO

AMERICAN ARTISAN, February, 1948

# Now the Villain shrieks



Helen Zavoda,  
J & H Associate  
Bearing Division

Better bearings through

## JACK & HEINTZ

Mass Precision

*To make sure* that each Jack & Heintz ball bearing is unsurpassed in *smooth, quiet operation and long life*, it is given a final test by spinning it at its operating speed and "auditioning" it with a highly sensitive sound pickup and amplifier. This exposes *Villain Friction*. The slightest irregularity, ordinarily inaudible, becomes a shrill noise and that bearing is rejected.

Consider, too, the many previous high-precision tests for size, uniformity and finish of balls and races and you see why you get only the finest bearings from Jack & Heintz.

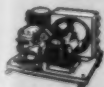
Precision methods like this have been applied to *all* Jack & Heintz operations . . . to make better products that *last longer and cost less to maintain*.



Electric Motors



Ball Bearings



Refrigeration Compressors



Dynamo Magnets



Aircraft Inverters



Aircraft Generators



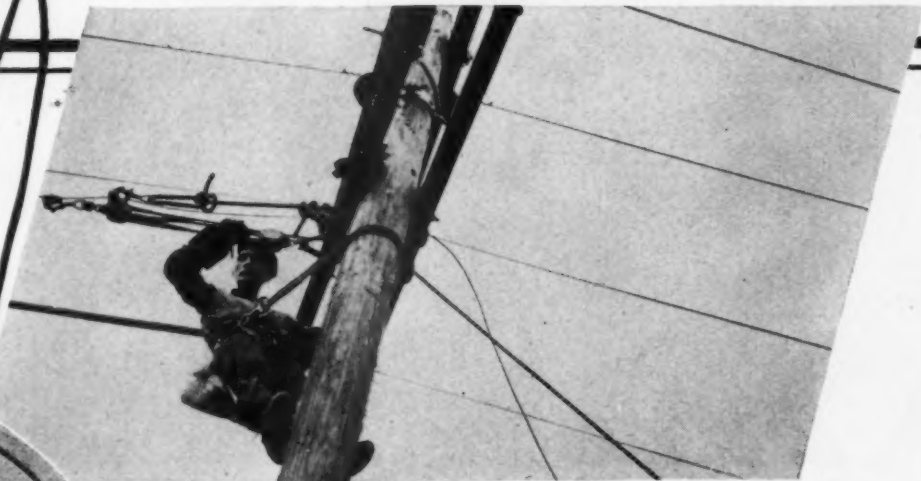
Aircraft Starters

**JACK & HEINTZ PRECISION INDUSTRIES, INC., Cleveland 1, Ohio**

# CRESCENT\*

## *tools of Certified Quality...*

Complete dependability is a "must" for jobs such as this. Crescent Wire Grips are tested and certified for full safe load capacity before they leave the factory.



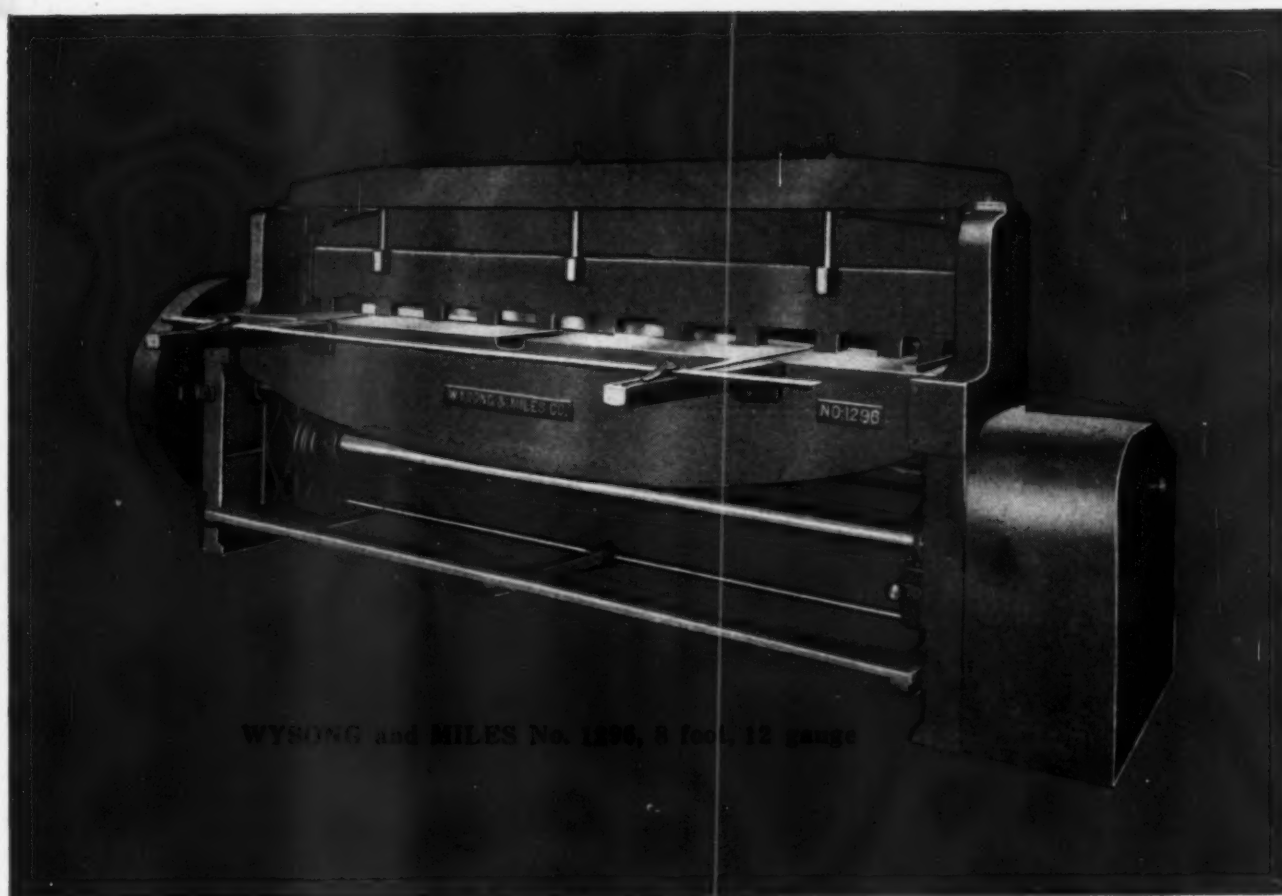
Individual testing, though costly, is the only *sure* method of determining the quality and dependability of each tool that reaches the market. At Crescent, a tag is attached to every tool which has been individually tested, certifying that the tool has passed tests designed to insure that it will live up to all that should be expected.

In addition to wire grips, the Crestoloy line of pliers is individually tested. Other items are production tested, and while not individually tagged, constant checks are maintained so that there is little likelihood of defective tools reaching purchasers.

**CRESCENT TOOLS**  
*Give Wings to Work*



\*CRESCENT is our trade-mark registered in the United States and foreign countries for wrenches and other tools. "Crescent" tools are made only by Crescent Tool Company of Jamestown, N. Y., and are sold by leading distributors everywhere.



WYSONG and MILES No. 1296, 8 foot, 12 gauge

## TOPS IN SHEARING

**Accuracy** Ease of Operation and High Production are key features of Wysong and Miles Precision Shears. The massive, balanced semi-steel construction insures perfect alignment and prevents twist, spring or deflection.

**Compensating Holddown** The holddown feet are individually spring-actuated; independent plungers automatically and securely clamp even short widths of material. Varying gauges can be sheared without adjustment.

**Friction Clutch** Disc-type, treadle-activated clutch engages with minimum of shock. For safety;

non-repeat unit can be set, stopping shearing action after each cycle. When on repeat, machine will shear continuously as long as pedal is depressed.

**Precision Back Gauge** The self-measuring ball-bearing parallel back gauge is easily set to .0078 (1/128th) of an inch. One end of gauge bar is adjustable for taper shearing.

**These Features** and every other detail make the No. 1296 a uniformly superior squaring shear. Jigs and fixtures are used in the machining and drilling of every part of every Wysong and Miles machine.

Other Squaring Shears in 10, 12, 14 gauge. Write for complete information.

# WYSONG and MILES Co

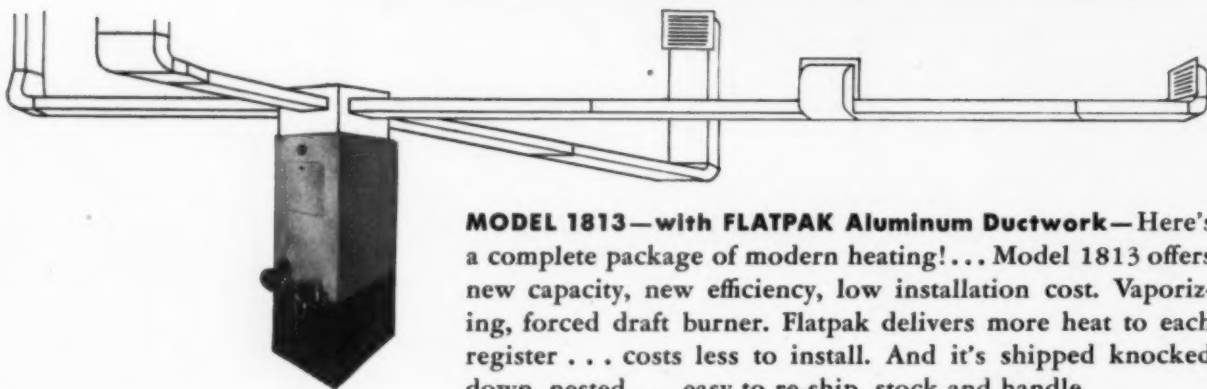
GREENSBORO, NORTH CAROLINA

THE FINEST IN SQUARING SHEARS AND BENDING ROLLS



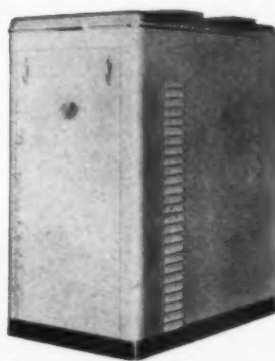
## To give SALES that "New Look"... give CUSTOMERS a "Good Look" at these units

When more of your prospects see them—you'll see more and faster sales! THESE VIKIMATIC UNITS WERE OUTSTANDING at the International Heating & Ventilating Exposition in New York. Displayed in your store they'll stand out for more business. Ask your Vikimatic distributor about the plan that helps you SHOW more, SELL more!



**MODEL 1813—with FLATPAK Aluminum Ductwork**—Here's a complete package of modern heating!... Model 1813 offers new capacity, new efficiency, low installation cost. Vaporizing, forced draft burner. Flatpak delivers more heat to each register... costs less to install. And it's shipped knocked down, nested... easy to re-ship, stock and handle.

● **Vikimatic Floor Furnace**—Floor level heat with all the advantages of fuel oil and automatic control. Also available in deluxe model with stainless steel combustion chamber.



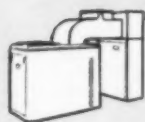
● **Vikimatic Model 604**—Oil-fired winter air conditioner with pressure atomizing burner. Has blower fan, filters and humidifier. Controls are completely enclosed. Also available in gas-fired model.

● **Vikimatic Water Heater**—Completely automatic, with the economy of fuel oil. No electricity needed. High recovery rates... good for large users of hot water.



THE VIKING MANUFACTURING CORPORATION • 1747 Chester Ave. • Cleveland 14, Ohio

Year 'Round  
Air  
Conditioning



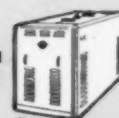
Consol  
Heaters



Utility  
Room  
Furnaces



Oil-fired  
Boilers

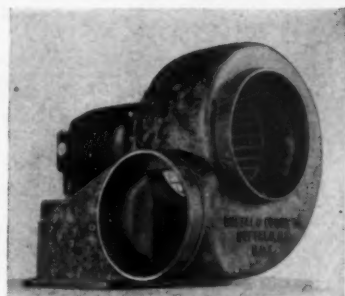
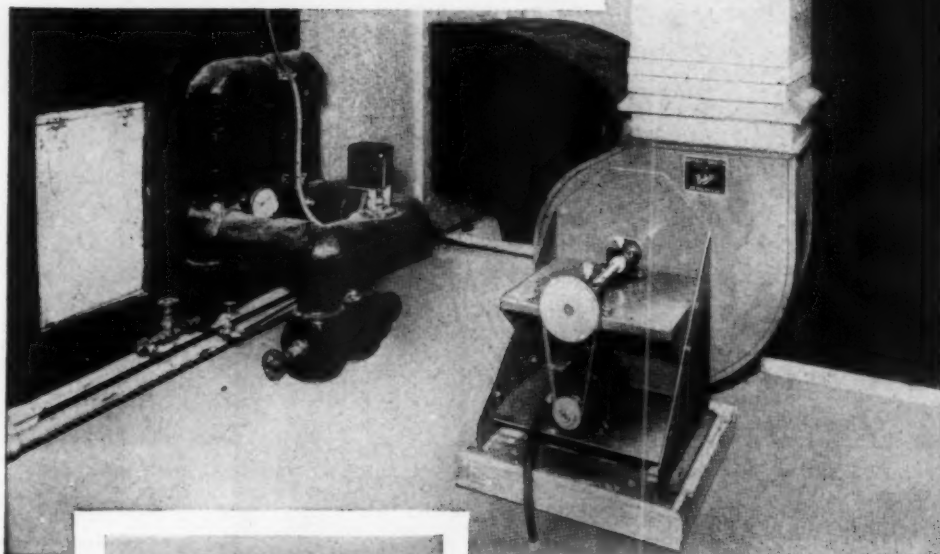


Conversion  
Oil Burners



AIR EQUIPMENT TO HELP YOUR BUSINESS

# Put FLEXIBILITY, ECONOMY INTO YOUR VENTILATION!



**BUFFALO BABY VENT SETS** are husky, portable, readily adjustable for various discharge positions. Ideal for ventilating small rooms, withdrawing fumes, vapors, dust. Very compact.

*Buffalo Vent Sets Take Little Space, as Shown Above*

## BUFFALO VENT SETS Solve Many Problems

● Here's a "one-piece" fan that is quickly and easily set up in tight space—temporarily or permanently—indoors or outdoors (with All-Weather Cover over motor and drive). It allows economical multiple fan installations to suit changing needs. Put this fan on commercial or industrial ventilation—for low-cost, flexible operation. In capacities from 600 cfm to 12,000 cfm. Write for bulletin 3499.

# BUFFALO FORGE COMPANY

504 BROADWAY

BUFFALO 5, N. Y.

*Canadian Blower & Forge Co., Ltd., Kitchener, Ont.*



### EQUIPMENT FOR

- ★ VENTILATING
- ★ HEATING
- ★ COMFORT COOLING
- ★ PROCESS COOLING
- ★ AIR TEMPERING
- ★ AIR WASHING
- ★ EXHAUSTING
- ★ BLOWING
- ★ FORCED DRAFT
- ★ INDUCED DRAFT
- ★ PRESSURE BLOWING
- ★ CLEANING
- ★ DRYING

CUTTING AIR COSTS IN EVERY BRANCH OF INDUSTRY

# Right down your alley!

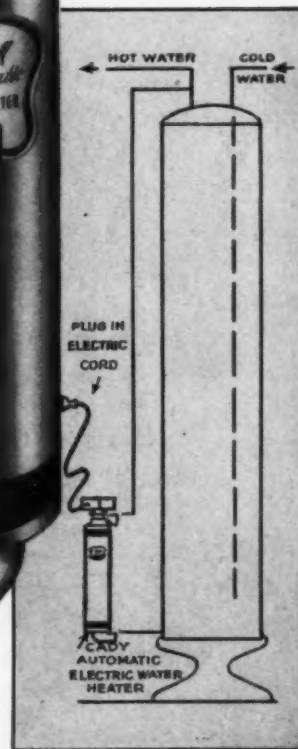
## NEW A Cady Automatic ELECTRIC WATER HEATER *that you can install*

- NO NEW WIRING NEEDED
- PLUGS INTO EXISTING WALL OUTLETS
- DESIGNED FOR ANY TANK FROM 5 TO 30 GALLONS

NOW you can make extra sales by supplying the growing demand for electrical water heater installations. The new Cady Automatic Electric Water Heater provides ideal hot water supply for homes with warm-air or hand-fired heating systems. It hooks onto any storage tank from 5 to 30 gallons by connecting two pipes and plugging in a cord to any 110-120 volt A.C. wall outlet.

The Cady Water Heater is a simple, efficient, low-cost unit... a quality product throughout. Heating element approved by Underwriters' Laboratories. Copper and brass waterways throughout. Fiberglass insulated metal jacket. Positive, built-in automatic control adjustable for final temperatures from 80° to 180° F. 1000-watt heating element with 6-foot plug-in electric cord. Recovery rate: 5 gallons per hour, 100° F. rise. Size: 4½" x 16½" overall.

*Cash in now on this new profit builder. Send today for full particulars. The Cady Company, Dept. N, 123 Georgia Ave., Providence 5, R. I. (Subsidiary of General Fittings Co.)*



AUTOMATIC

# CADY

## WATER HEATER

ELECTRIC

# *Fast to work... slow to rust*

## **Beth-Cu-Loy** **GALVANIZED** **Steel Sheets**

In selecting steel sheets your first consideration is their workability. Can they be formed smoothly, cut readily and soldered easily to do a top-grade job in the shortest possible time? With Beth-Cu-Loy Galvanized Sheets the answer is yes. Sheet-metal contractors find in them the uniformity and ductility needed for clean, rapid work.

Your next concern in selecting sheets is their resistance to rust. Home owners and other customers expect sheet-metal work to stand up well against corrosion. Give them jobs that last and you get customer goodwill in return.

Beth-Cu-Loy Galvanized Sheets have the corrosion-resistance that assures longer life for ductwork, window frames, cornices and similar installations. These sheets are protected on the surface by a bright coating of Prime Western zinc and under the surface by a base of copper-bearing steel with from 2 to 2½ times the rust-resistance of plain carbon steel.

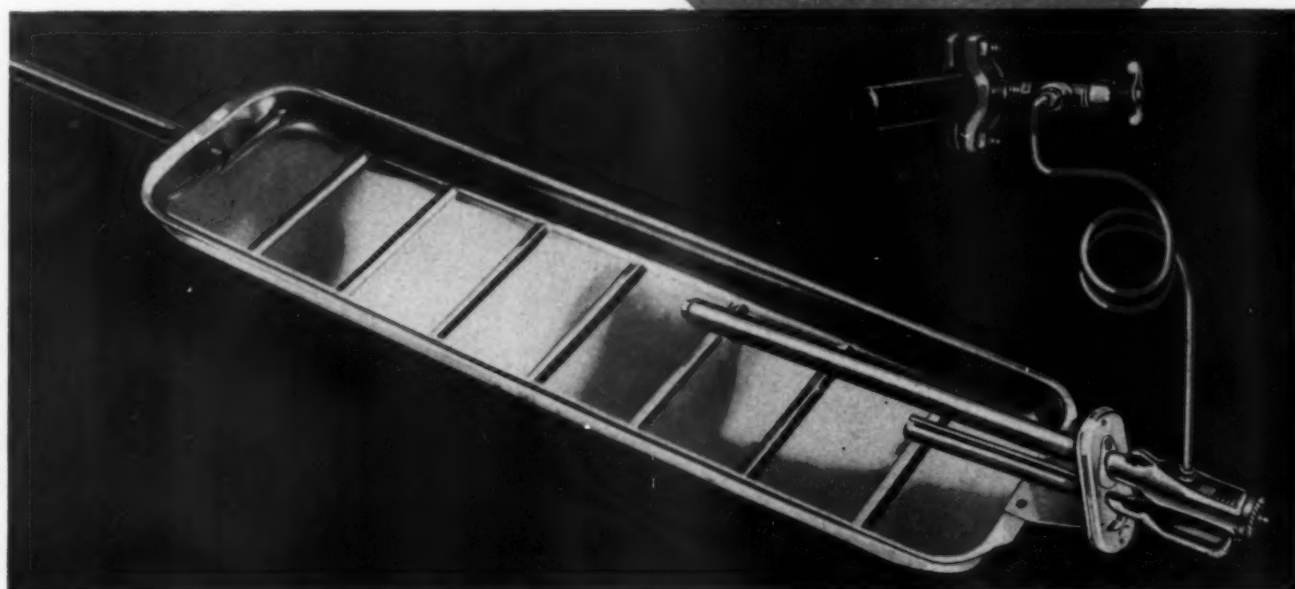
**Bethlehem Steel Company, Bethlehem, Pa.**

On the Pacific Coast Bethlehem products are sold by  
Bethlehem Pacific Coast Steel Corporation



*The Greatest  
Name In  
Humidifiers*

**THERMO-  
DRIP**



**PEAK EFFICIENCY AT LOWEST COST**

Thermo-Drip Humidifiers are first choice with furnace men the nation over... economical—efficient—durable—they give perfect balance of humidity and temperature at all times.

**BI-METAL THERMOSTAT**

Compact—no complicated parts—sturdy—gives years of trouble-free service. Requires no additional adjusting after installation.

**STAINLESS-STEEL PANS**

Long lasting—cannot rust or corrode—heat quicker—cause faster evaporation—give larger evaporating surface. Tailored to meet every humidifying need.

**EASY INSTALLATION**

Quickly attaches to any type or make of furnace. Manufactured for tailored fitting. All accessories included—nothing extra to buy.

Write today for complete catalogue, including prices and deliveries.

DEPT. A-248

**Automatic Humidifier Co.**  
CEDAR FALLS, IOWA



# Comfort is Profitable

Grandma And Her Children  
Want The House Warm  
And Clean



## SELL THEM CLEAN, RELIABLE OIL HEATERS EQUIPPED WITH "DETROIT" FLOAT VALVES



People old enough to have cleaned up after a smoky, sooty, dusty "base burner" particularly appreciate the comfort of clean, reliable oil heat. Grandma, as well as her children and grandchildren, want the home clean, warm and comfortable.

Sell them the maximum comfort of clean, reliable oil heating devices—"Detroit" Float Valve controlled. The comfort market is profitable.

"Detroit" Float Valves are durable, dependable—provide sure regulation of oil fired space heaters, water heaters, furnaces, and ranges. Temperature compensated, flow is not affected by cold or warm oil.



### "DETROIT" CRC-239 FLOAT VALVE

Made in several types for various services. Manual regulation for space heaters, ranges and floor furnaces—tank temperature regulation for water heating—thermostat control for furnaces, space heaters or floor furnaces. Furnace type valves may be had with automatic fan switch

**"DETROIT" Float Valves—GUARDIANS OF THE HOME FIRES**

2903

## DETROIT LUBRICATOR COMPANY



General Offices: 5900 TRUMBULL AVENUE, DETROIT 8, MICHIGAN

Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

Canadian Representatives: RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"Detroit" Heating and Refrigeration Controls • Engine Safety Controls • Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators

# CONCO Means..

## SAVE FUEL...in Comfort

**At Least  
350,000 Oil-Wasting Burners  
MUST BE REPLACED  
IMMEDIATELY!**

FUEL SAVING—IN COMFORT, means booming business and soaring profit for alert CONCO dealers. They're going after the huge, rich replacement market. They know that at least 10% of the oil burners now in operation are obsolete and wasteful.

Never before has the remarkable economy of CONCO's efficient heating units had the sales appeal it has today!

Efficient CONCO heat is the perfect, modern answer to the demands of both the replacement and the new construction markets.

Whatever the problems in heating may be, continuing CONCO research will keep CONCO dealers in the lead with the best in modern, economical heating equipment.

CONCO  
Magic Spray  
Oil Burner

CONCO-BREESE  
Horizontal  
Oil Burner

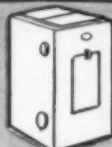
# CONCO heat



WATER  
HEATERS



GAS-FIRED WINTER  
AIR CONDITIONERS



OIL-FIRED WINTER  
AIR CONDITIONERS



INDUSTRIAL  
STOKERS



STEEL  
FURNACES



DOMESTIC  
HOPPER STOKERS



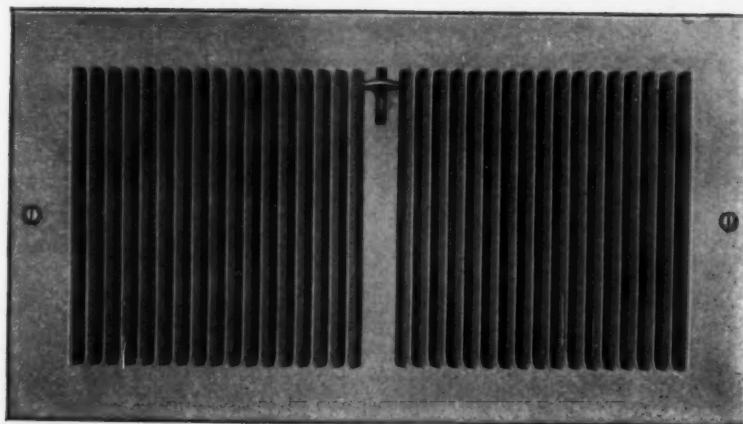
DOMESTIC BINFEED  
STOKERS



CONVERSION  
OIL BURNERS

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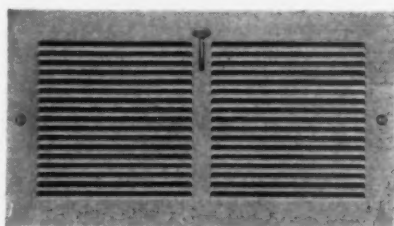
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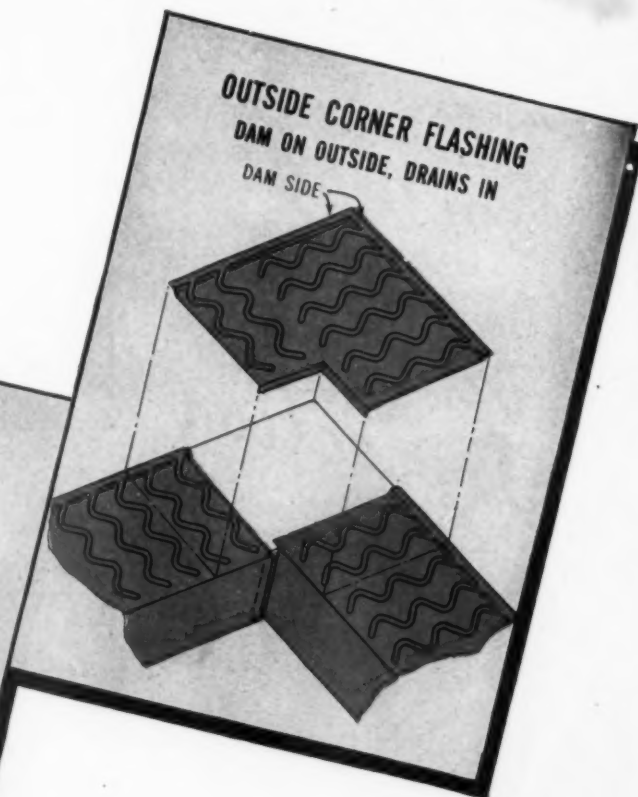
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## Use ANACONDA Through-Wall Flashing with one-piece, inside and outside, corner flashings

**A**NACONDA THROUGH-WALL FLASHING is designed to provide positive drainage, a strong mortar bond and long-lived protection ... and also to make the sheet metal contractor's work as easy as possible.

This copper flashing that *drains itself dry* is carried in stock for 8- and 12-inch walls in five-foot and eight-foot straight lengths, together with corner pieces for both inside and outside drainage. These corner pieces are so designed that the corrugations interlock with those of the adjoining straight sections, providing the same thorough drainage, watertight joints and firm mortar bond at the corners as in the main part of the wall. The flat selvage on both straight lengths and corner pieces is an aid in

making neat, sharp bends for counter flashing or for locking to adjacent metal.

For detailed information on Anaconda Through-Wall Flashing, see our catalog in Sweets.

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For additional information regarding sizes, efficiencies, specifications, etc., write Dravo Corporation, Heating Section, Dravo Building, Pittsburgh 22, Pa. Ask for bulletin GK-516.

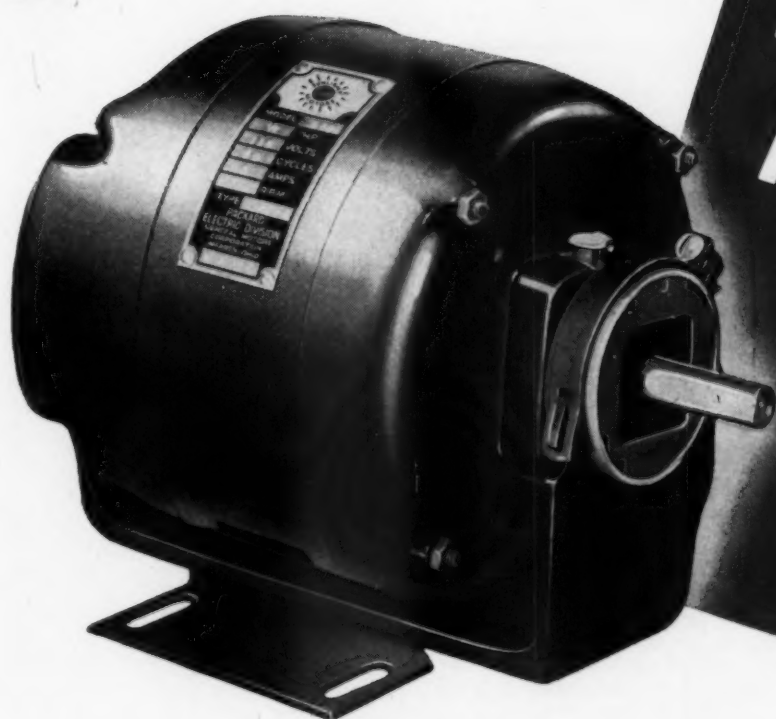
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# *What good is a house without heat?*

---

This winter is proving many modern houses to be obsolete due to conditions no one thought possible one year ago.

---

● They cannot be adequately heated because of shortages of certain fuels.

It is predicted that shortages in those fuels will recur with the next heating season, perhaps for years.

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Hard-coal heated homes can have all the heat

wanted at low cost. That's the comfortable way to heat a home, and only a comfortably heated home has healthy heat. With hard-coal heat, you can store a whole winter's supply of fuel. No running out when a family needs fuel most.

Business buildings, hotels, apartment houses, hospitals, schools, as well as homes, in fact, all types of buildings can have unfailing heat from hard coal. In these pages, we will bring you news of modern heating equipment for anthracite. Plan to feature it while folks are shivering from shortages of certain fuels.

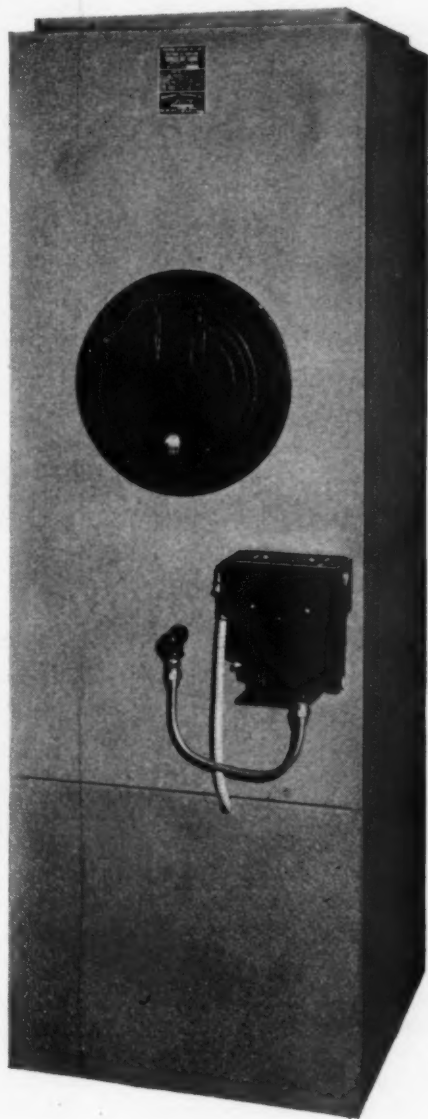


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*Mr. Dealer!*

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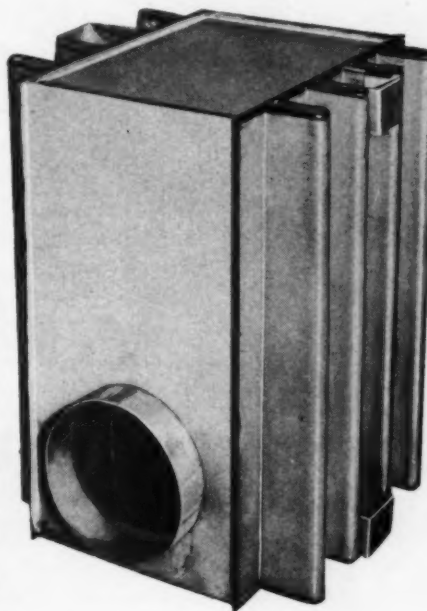


You are looking for a fast-moving, quality warm air winter air conditioner—here's your best bet. It's the new Heating Specialties Company Model No. 65 for oil or gas. Designed for the average home it will perform for years without the slightest trouble and will eliminate a lot of those time-consuming adjustment call-backs which are the bane of warm-air dealers.

Just check over the following specifications—you'll see at once why we're proud of this unit and why it will enable you to enjoy good profits and high customer recommendations:



1. CAPACITY—65,000 B.T.U. at bonnet.
2. JACKET DIMENSIONS — 20" x 20" x 57½".
3. BURNER—"Whirl Flame" vaporizing burner with built-in stainless steel inner chamber producing bunsen-like flame.
4. LARGE, HEAVY GAGE, STAINLESS STEEL COMBUSTION CHAMBER with extended corrugated side walls. All combustion areas from pilot light to flue are "Lifetime Stainless Steel". This reduces service to a minimum.
5. FORCED AIR is impelled by the popular "Aristocrat" four blade impeller fan for efficiency and freedom from noise.
6. SHIPPED with all controls (Detroit Lubricator).
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Corrugated Stainless Steel Heat Exchanger

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# HEATING SPECIALTIES CO.

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## Attractive job—HANDSOME PROFIT

Now is the time to look into such high-quality, long-profit jobs as ARMCO Stainless Steel marquees for hotels, night clubs, theaters and restaurants.

The handsome appearance and rustless qualities of ARMCO Stainless are well-known. Its soft, neutral tone blends well with any building front. And you can assure your customers that an occasional simple washing will keep this gleaming metal bright and attractive through years of trouble-free service.

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Get in touch with your Armco Distributor. He

can give you immediate delivery of ARMCO Stainless Steel sheets, bars and wire in all the most widely used sizes, gages and finishes. Or write direct to The American Rolling Mill Company, 63 Curtis Street, Middletown, Ohio. Export: The Armco International Corporation.

### TURN IN YOUR SCRAP NOW . . . help make more steel

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**ARMCO STAINLESS STEELS**



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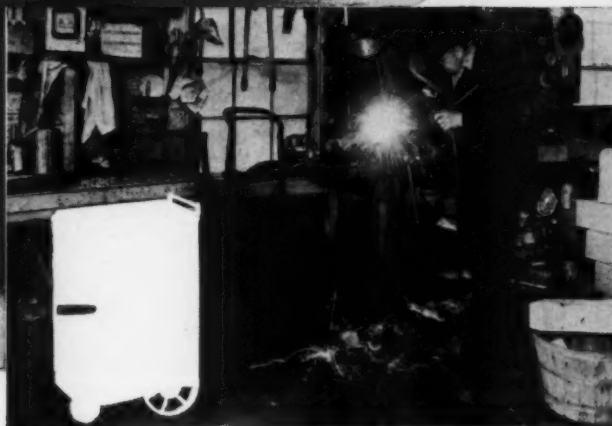
If so, one or more of these Westinghouse shop welders can help you plug up holes where valuable time and money is being lost. For help in picking the best unit for your needs from these or from the larger Westinghouse industrial type welders, see your Westinghouse representative—today! Westinghouse Electric Corporation, P. O. Box 2025, Buffalo 5, N. Y.

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**IF IT'S**

- Fabrication
- Light production welding
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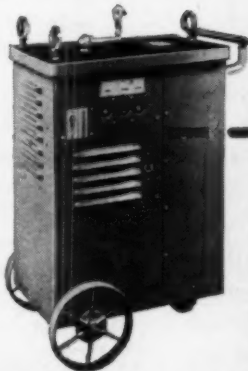
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In spite of shortages, we are putting forth every effort to serve all Industry to the best of our ability. Naturally, many sizes and certain products are out of stock. However, for the most part you can depend on Ryerson for immediate shipment of a wide range of steel products.

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# RYERSON STEEL

# AMERICAN ARTISAN

RESIDENTIAL  
AIR CONDITIONING  
WARM AIR HEATING  
SHEET METAL CONTRACTING

## Labor Management Relations Act

**T**HE Labor Management Relations Act enacted last year by Congress has become recognized as the most detailed and comprehensive labor legislation in United States history. Its passage over a Presidential veto on June 23 climaxed the efforts of Congress during the first half of the year to legislate equity into the labor statutes. During the last half of the year there was much controversy over its provisions. Between its enactment and its effective date on August 22, it was heralded by its advocates as the most advanced social legislation of our time, while its opponents referred to it as a "slave labor law." Since then, and with some meager experience with its provisions, there has been some yielding of opinion on both sides of the controversy.

Much has been said and written about the new law. Much of this has been very one-sided—either anti-labor or anti-management.

Its language and provisions have been cited as both profound and complicated, and as simple and concise as a municipal traffic code.

Certainly there has been room for moderation. Its history discloses that it was drafted with sincerity and from exhaustive research into the problems of labor relations. Many of its provisions are yet subject to judicial decisions. Many regulations governing procedure are yet to be issued by the National Labor Relations Board. The Act itself creates a congressional committee charged with the duty of making a thorough study and investigation of the entire field of labor relations. This committee must report to the Senate and House of Representatives not later than March 15, 1948.

Many of its provisions have an immediate effect on the labor relations of heating and sheet metal contractors who, as employers of building tradesmen, have long had agreements with unions. In many metropolitan areas, the closed shop agreement has been an important premise of labor relations in our industry. In the new law a closed shop agreement is construed as discrimination—an unfair labor practice.

Since contractors are destined to frequent and intimate contact with the Act, it will be well to concisely review some of its provisions. For all practical purposes the law may be considered to be in two main divisions:

The National Labor Relations Act (Wagner Act) as amended.

Provisions for procedures for the settlement of labor disputes and for relief from abuses, such as unlawful strikes and boycotts.

There are five parts, called titles:

Title I. The National Labor Relations Act as amended by the new law, is contained in this part.

Title II. Provides for the establishment of a Federal Mediation and Conciliation Service and its procedure in threatened or actual strikes or lockouts which imperil the national health or safety.

Title III. This part is devoted to provisions on five separate matters: (1) Suits by and against labor organizations; (2) Restrictions on payments to employee representatives; (3) Boycotts and other unlawful combinations; (4) Restrictions on political contributions; and (5) Strikes by Government employees.

Title IV. Creates a Joint Committee to study and report on basic problems affecting labor relations and productivity.

Title V. Contains definitions of terms used throughout the Act and provides for the right of an employee to refuse to work.

Perhaps the most important characteristic of LMRA is its observance of the rights of employees, employers, and unions. Each will find their relations intimately affected by its provisions. The Declaration of Policy which prefaces the Act observes that industrial strife can be avoided or substantially minimized if employers, employees, and labor organizations each recognize under law one another's legitimate rights in their relations with each other. And further, that neither party has any right to engage in acts or practices that jeopardize the public health, safety, or interest.

"It is the purpose and the policy of this Act, in order to promote the full flow of commerce, to prescribe the legitimate rights of both employees and employers in their relations affecting commerce, to provide orderly and peaceful procedures for preventing the interference by either with the legitimate rights of the other, to protect the rights of individual employees in their relations with labor organizations whose activities affect commerce, to define and prescribe practices on the part of labor and management which affect commerce and are inimical to the general welfare, and to protect the rights of the public in connection with labor disputes affecting commerce."

With this brief review of the legislative history and the apparent intent of Congress at the time of its enactment, it is possible to better appraise its provisions and their effect on contractors in the warm air heating and sheet metal industry.

*This is the first of a series of editorials on the Labor Management Relations Act.*

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

*Arnold Kruckman's*

## *Washington Letter*

★ ★ ★ ★ ★ ★ ★ ★ ★ ★



# Integration And Its Effects

Integration, the performance of fabrication and secondary manufacturing processes not common to primary industrial groups such as steel, oil, and similar units of the national economy, finally has come before the Federal Government as an acute issue. It was brought into the open by John W. Harvey, the dominant person in the Kramer Machine and Engineering Products Company, with plants at Leavenworth and Topeka, Kansas. His business formerly was known as the Great Western Manufacturing Company, one of the oldest of its kind in Kansas, having come into existence nearly 100 years ago. By a curious chain of circumstances, which will be explained later in this letter, Mr. Harvey was made a member of the President's Business Advisory Committee or Council (it is known as either), which functions in the Department of Commerce, with special reference to farm machinery and sheet metal products, under the leadership of Commerce Secretary Harriman.

Until Mr. Harvey suddenly erupted into the picture, the committee, made up almost solely of the representatives of big business, was considered almost sacrosanct. The appearance of Harvey is reported to have precipitated the effect of a socio-economic atomic bomb. Since the repercussions have reached into the Senate, as well as the House of Representatives, it is not unlikely you may have seen inklings in the newspapers by the time this is published. It is a vital and critical issue, politically as well as from the economic and social standpoint, because the millions of intermediate and smaller business men and women are immediately affected where it most hurts—in the pocketbook, virtually in the threat that many pocketbooks not only may be desperately slimmed but might even be taken away entirely. This danger obviously will hit those statesmen who come up for election this Fall, and will have a bearing on the Presidential vote. Already, at this writing, a day or two after the Harvey explosion, there is a further threat that the life of the Senate Small Business Committee might be curtailed. It is an intricate and complex situation, superficially; but it rapidly is crystallizing into a clear and simple po-

sition in its fundamental essence. There is every indication that lines are being drawn, and that the smaller business groups are becoming aware of certain dangers, and that the reduction of their problems to simpler equations has caused them to coalesce defensively, and, possibly, offensively. There is much evidence here that the Smaller Business organizations which heretofore have functioned largely by gesture and publicity, under one-man professional leadership, will be succeeded by real organizations, in which the actual business man will take an active part. The feeling here is that the next six months may see a large nation-wide association of the millions of smaller business people, possibly actuated and stimulated by political leadership; and that this group will logically form a coalition with the farm groups, already effectively organized, and politically, as well as socially and economically, powerful.

### **No Steel in Kansas**

All this recently gained immediate momentum by reason of a visit from Harvey to the Capital. Harvey needed steel. He found he could get no steel from his normal and usual suppliers in and about Kansas where he had been buying. After a sort of whirlwind exploratory tour of the Capital, he came to the conclusion that there was no current source of supply except the grey market; and he found that the grey market price of, say, 8c a pound, was about the same as the price he could collect for his finished product. Naturally, there is no percentage in selling without profit. Harvey visited Senator Wherry of Nebraska, Senator Martin of Pennsylvania, Senator Capper of Kansas, and Senator Klem of Missouri, and others, all of whom are members of the Senate Small Business Committee. Also, he made the acquaintance of Director George F. Meredith, of the Senate Small Business Committee. His dynamic personality made an impression. At their suggestion he filed with the Committee a request for a hearing in Kansas, at which the Committee would thoroughly investigate the situation. In his memorandum Harvey presented an arresting statement of the present position of the steel processors and fabricators in Nebraska, Kansas, and Western Missouri. It was so sharply typical

of similar outlines from all regions, where there are substantial numbers of members of the industry, that the statement has been accepted as a key to the national condition.

#### **Pre-War Supplies Out**

Harvey told the Senators there are over 700 smaller processors and fabricators of steel in the area. Before the war their historical suppliers were located at Granite City, Ill., Kansas City, Mo., and in the Cleveland-Chicago region. They also received some supplies from Pennsylvania and from jobbers. But after the war the supplier mills withdrew from the Nebraska-Kansas-West Missouri area. The Kansas City supplier is reported to be itself turning over its entire product to its own subsidiary fabricating plants, with absolutely nothing left over for the customers it formerly served. The Granite City, Ill., supplier sold its plate mill to an automobile manufacturer, depriving the customers in the area of their source of sheets and plates. The mills in the Cleveland-Chicago area, according to the formal Harvey statement, have flatly refused to accept orders from any processors or fabricators in the Nebraska-Kansas-Western Missouri area. The historical basis, upon which many depended, has thus been thrown out of the window. They almost literally have no place to turn, and they found themselves under the necessity of either quitting or scraping together steel from any odd nooks and crannies they could find.

The situation grew so desperate in Kansas that the Governor, Frank Carlson, named a committee to make a survey. Before the survey was complete, reports had come in from 150 plants in that state. Thirty percent were not operating at all; the rest were functioning just from day to day, with no inventories. Some hopefully depended upon the grey market, and two operators reported they could get enough steel to run for two months. The report pointed out that unless some solution is found quickly, most of the plants in Kansas, Nebraska, and Western Missouri will simply fold up. It was suggested that the area, virtually in the center of the nation, has recently been developing with amazing celerity as an industrial territory with national implications, and that it has revealed every sign of further great development as a permanent expansion of industrial America. Obviously, this extraordinary flowering is a response to a need which is the result of an unusual growth in all phases of life in the region. Harvey's memorandum emphasized that it is not in the national interest to permit the more than 700 steel processing and fabricating plants to be closed down. He stressed the working forces that would be thrown out of jobs and dispersed; the economic life of the region which depends upon this industry would be partially paralyzed and arrested; and the potential value of the whole economy of the area would be destroyed in relation to any national emergency which may be ahead.

#### **Investigation Needs Legislation**

The Senate Small Business Committee was eager to initiate the necessary investigation, but could not go ahead because new legislation is required to continue its existence, and to supply essential funds. On the day this is written Senators Wherry, Capper, Martin, and others have introduced a resolution which, if

adopted, will extend the life of the Committee, and would pave the way for the necessary appropriation of funds. But apparently an undercurrent has developed to stave off the adoption of the resolution. The sponsoring senators wished to bring the resolution directly before the Senate without delay. But the forces which are opposed, are seeking to have the resolution referred to a senate committee. When a resolution goes to a committee it must wait its turn for consideration; and with a large file of business before a committee it takes much time to bring it out for consideration. Moreover, such consideration often may be delayed by parliamentary processes; and with prolonged committee debates the success of such resolution often is questionable. If the resolution is finally sent to a committee there is serious doubt whether or not it will ever be reported, and sent to the floor of the Senate for consideration and adoption. At this writing the fate of the resolution is doubtful, and the life of the Senate Small Business Committee is definitely in question. And this obviously spells that the 700 smaller steel processing and fabricating plants in Kansas, Nebraska, and western Missouri may not be able to get the relief which the limelight of an investigating would unquestionably bring them.

As a further step in solving the problem, Director George F. Meredith, and the senators on the Subcommittee for Steel, Senators Martin, of Pennsylvania; Caon, Washington; Ives, New York; Ellender, Louisiana; and Holland, Florida, secured the appointment of Harvey, the smaller steel fabricator and processor from Kansas, on the President's Business Advisory Committee, headed by Commerce Secretary Harriman. The step was almost revolutionary. Harvey is the first really genuinely "smaller businessman" to be made a member. A meeting of the Committee occurred almost immediately after he was appointed. To the distress of most of the members of the committee he immediately made a vigorous and powerful presentation of the plight of the people in his segment of the national economy. When his facts were challenged he presented documentation to support his statements. Further, he made clear that, in his opinion, the trouble springs fundamentally from the process of integration by which the great primary units of industry are using their products to support their own subsidiaries, which do the processing and fabricating that has been the business of thousands of the smaller units of the business economy of the United States. He produced the records of the Senate Smaller Business Committee, and other agencies of the Federal Government, to show that this process of integration is going on in virtually all the great primary industries of the national economy. The representatives of the challenged industries, who are on the President's Business Advisory Committee, questioned his statements, and suggested that he might obtain any relief he required by their personal interposition in his individual troubles.

The issue seems to be dramatically joined. In its most recent report, the Steel Subcommittee of the Senate, over the signature of Senator Martin, recommends that each steel-producing company review its own customers' needs at once, with a view to correcting inequities of distribution and proportions of steel going

*(Please turn to page 146)*

# Prospectus for 1948

ARTHUR ROBERTS  
Pompton Lakes, N. J.

**A**NOTHER year is here with a bevy of problems, and as things look at this writing, the new year will challenge the ingenuity of businessmen just as effectually, if not more so, as the war and postwar years gone by. Those who expect to end 1948 with a satisfactory profit must go "all-out" for better business management. Efficient coverage of these important elements in business management will keep the sheet metal contractor and warm air heating dealer on a sound financial footing and help him maintain maximum profits.

**1:—Adequate accounting methods.** Unless your accounting system is properly fitted to the business and comprehensive enough to produce figures that will mirror the important functions of operations, you cannot manage your business efficiently. The accounting systems used by many managements in this industry may have sufficed in a calmer day, but they should be examined now, and revamped, whenever necessary, to provide a dependable conning tower from which to direct operations in the difficult year ahead.

**2:—Monthly analysis of business figures.** The recordings in the books may be accurate and adequately mirror operations, but unless they are analyzed monthly, they are of limited use. To make a dependable analysis of the figures and their relationship to current sales and prior-period results, one must arrange them systematically on the profit and loss statement, maintaining the same item sequences for each accounting period.

If the books are kept up-to-date, and they should be, the preparation of a profit and loss statement monthly is not difficult, yet, many in this industry prepare these statements only annually, foregoing the opportunity of applying correctives within the month after operating defects appear. In days of greater stability, operations ran more smoothly, and the deflections from the norm were less frequent or costly, hence, profit and loss statement analysis over a longer period of time was less likely to affect profits adversely. Today, with high taxation seemingly a fixture for some time, high operating costs likewise, perhaps the return of rationing or controls of some kind, and international complications, one can rest assured that business will encounter many foxholes during the coming year, hence, it is wise to maintain close communion with operating results, which can be done only by means of monthly profit and loss statement analysis.

**3:—Planned operations.** Many have shied away from this important business chore and today prewar budget-users in considerable number have discarded the practice because they assume that in these hectic times they cannot plan, when as a matter of fact, they need to plan more today than ever before. Big businessmen, despite great handicaps and seemingly insoluble problems, are still planning business movement over a forthcoming period and find that it pays. The smaller businessman can follow this lead with profit.

One cannot plan with exactitude at any time, nevertheless, it is wise at the beginning of the year to project oneself into futurity and try to forecast the proper moves on the checkerboard. Planning produces ideas, some of which are sure to be constructive. Managing a business with little or no thought of tomorrow, practiced by too many members of this industry, runs counter to the practices of those who come out on top in the field of barter.

**4:—Cost control.** Money is plentiful, and at such a time, cost control must be most rigid, because there is a tendency to spend too freely. The dollar doesn't buy so much any more, hence, the dollar saved doesn't mean so much, is the too prevalent attitude and unless checked, may result in extravagance and limited profits. Costs cannot be kept down to prewar levels, but cost ratios, strange as it seems, should be lower than prewar ratios, and wise management will try to keep them there.

Because many organizations can get all the business they want, the overhead ratio to sales can be kept below prewar levels if the management is efficient. This is why big business, despite seemingly crippling taxation and high costs, has been able to show substantial profits. Plants are working at peak capacity, hence, the overhead ratio to sales, despite higher overhead outlay, is less than in prewar years when plants averaged 70 per cent of capacity. The same holds true for sheet metal and warm-air heating establishments. The more sales, the lower the overhead ratio and many organizations have as much business as they can handle today. Readers should not confuse the actual dollar outlay for overhead with the overhead ratio to sales. The latter can be kept below prewar figures with effective cost control, the former will be higher.

Because the tax is so high, the sheet metal contractor or warm-air heating dealer should compute the tax on profits each month to determine the spendable income. The tax is progressive, increases with profitable volume, hence, the wise management will keep tabs on this relationship, otherwise, it may end up the year with much less money in the bank than anticipated. Tax comes under the head of cost control because tax is a fixed expense and today a major one. The reader should watch it carefully, as carefully as he watches other expense items, and not be fatalistic about it, assuming that because the rates are fixed, he cannot effect economies.

The budget, overhead trend sheet, stock and inventory forms and job costing sheets are records auxiliary to the books and good policing devices to maintain precision cost control.

**5:—Sound financial management.** High prices, the danger of inflation, heavy government spending and the possibility of a substantial drop in prices someday is putting every businessman on his mettle on finances. His business should be well-balanced, financially, and he should try to keep inventories, collections, working capital, investment on fixed assets and balance sheet ratios in the safety zone, not have any one element too high or too low. To maintain sound relationships at a time like this may not always be possible, nevertheless, it is wise to check excesses to the best of your ability. Because goods are easily converted into cash these days, because there is a big demand for work involving labor, a sheet metal contractor or warm-air heating dealer is not likely to get as pressed for working funds as in days when he had considerable capital invested for longer periods in inventories, when his books showed substantial amounts of unsold labor-hours, as was frequently the case in prewar times. However, he should maintain a ratio of at least 3 to 1, figuring assets to liabilities. This is higher than in prewar days when a ratio of 2 to 1 was often satisfactory, but a 3 to 1 ratio is safer today because of high tax payments, which must be paid in cash, and higher costs.

Now is a good time for members of this industry to liquidate fixed indebtedness, particularly obligations incurred before the war, when the dollar was worth more. In other words, pay off these debts with a cheap dollar. If you carry them longer, the dollar may increase in value, be harder to get, and the indebtedness that much harder to liquidate.

Take all deductions possible on the income tax return to conserve your finances. Write off bad debts, business and non-business, depreciation and actual loss on inventory. Because the cost of merchandise or materials may go up during the year, do not appreciate this cost on your books, or you pay more income tax than you should and dissipate working funds. Over-expansion is another drain on working capital because it means higher operating cost, hence, it should be considered when planning betterment. Too much expansion can cripple financial stability.

Prices will be high in 1948 and may go higher with the months. Normally, the reader would be warned to "cushion" a drop in prices by increasing his working capital but we doubt if the coming year will require

this safeguard. But, at the moment, there are indications that prices are on the down-grade, the sheet metal contractor or warm-air heating dealer should try to underwrite the loss on inventory by increasing working capital requirements accordingly. If there is likely to be little loss, he need not worry so much but if the loss may be substantial, it is wise business policy to have enough working funds on hand to "cushion" the drop, otherwise, one may have to borrow or fall behind in the payment of bills.

Even though collections may be good and the dollar value is down, accounts receivable should be kept in safe ratio to sales. This differs with the business. A review of past credit losses will give a perspective as to a safe ratio. It's a good habit to acquire. Someday the market will recede and then, if unemployment follows, the contractor or dealer will find it hard to collect and collection losses high. Extend credit with care and discount bills. These are boons to financial standing.

Watch the return on invested capital or net worth. Check it against the return before the war. It should be higher. This return is the real measurement of operating efficiency more so than the profit on sales today. The dollar value is lower so the return should be higher by at least 25 per cent.

**6:—Adequate promotions.** Every businessman should evolve some plan for promoting his wares and this is best done at the beginning of the year so that he will know approximately what he will spend for promotional effort and can set up a budget. European relief will probably create shortages and keep wages and employment high, also prices, and so, business should be brisk, but seasoned businessmen promote their wares all the time because experience has taught them that a lapse in promotional effort eventually puts a hex on long-range results.

Volume may be high during 1948 but this is no reason for a management to put promotional effort in moth balls and permit itself to grow rusty on its advertising and selling activities. You are in business on a long-term basis, not for a short-term period and should manage operations with that in mind, building prestige and goodwill with the years, good and bad.

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## Anti-Boycott Laws

NEW LEGISLATION PROHIBITING or restricting secondary boycotts within the limits of state jurisdiction has been adopted by twelve states in the past year.

California, Delaware, Idaho, Iowa, Massachusetts, Minnesota, Missouri, North Dakota, Oregon, Pennsylvania, Texas and Utah have found it advisable to curb this weapon of labor unions.

"Business Action," the publication that furnishes this information offers the opinion that some of this legislation was made necessary by the fact that laws against secondary boycotts already on the books had been held unconstitutional by the courts. Only Colorado and Wisconsin have laws prohibiting secondary boycotts that have so far passed the test of judgment by their respective supreme courts.

# Debt — The Silent Saboteur

Price Patton  
Financial Adjustment Co.  
New York City

**S**HOULD an employer concern himself with the problems of a worker who gets tangled up in financial troubles for one reason or another? Outside of humanitarian reasons, is it practical business sense to help straighten out the affairs of the worker whose budget has burst at the seams?

The answer to both questions is a decided "yes."

In the past 16 years we have approached hundreds of employers with a request for their cooperation in helping to untangle the muddled finances of some employe. In almost every instance, the employer's first reaction has been indifference and a shrug of the shoulders. "Why should the boss be bothered with the financial straits of some worker who hasn't shown enough sense to live within his means?" many employers asked. "The man got his pay check every week, didn't he?"

Indifference in some cases turned into indignation and the employer wanted to fire the over-indebted and troubled worker forthwith.

Yet in those 16 years that we have been dealing with the problems of over-indebted individuals and helping them regain a sound basis of budget management, we have been able also to prove to hundreds of employers that the problem of the over-indebted worker is more than the personal plight of an individual. It is a far reaching problem that has a real effect on the business of the employer and the safety and efficiency of the distressed worker and his shopmates.

## *Problem Is Widespread*

Employers who examine the influence of debt worries on safety and production efficiency are almost invariably surprised at the extent of these problems throughout their shops. They quickly learned that the obvious cases—the workers whose wages are attached with demoralizing frequency and who wear a continuous frown of anxiety—are actually only a small part of the problem. In fact, I might almost say they represent the smallest part of the problem, because their troubles have been brought into the open and that always helps to ease mental strain. Many of their fellow workers may be desperately covering up, juggling, stalling, and using all the tricks of the harassed debtor to pacify insistent creditors and keep their problems safe from public view—especially from the attention of their employer.

Forward-looking executives who thus become interested in the effects of employes' debt worries discover that carelessness, absenteeism, excessive labor turnover and unsettled industrial relations are directly

traceable in substantial degree to the worries that surround over-indebted workers. Reliable studies by industrial, medical and psychiatric authorities reveal that emotional unrest—much of which is caused by individual financial problems—is the greatest single contributory factor in unsatisfactory production and labor relationships in industry.

Intolerance with over-indebted individuals will not solve the plant problem. Dismissing the individual may just leave his job open for a newcomer who can bring with him greater financial distractions than the discharged worker takes away.

## *Strict Budget Needed*

Nor is tolerance alone enough to rectify the situation, either for the debtor, his family, or his employer. What is required is a close week-by-week budget training program and supervision of all family income until financial health is restored. This can be accomplished only by some organization which is concerned with the financial problems of the worker but which is not affected by emotional and personal reactions. A reliable budget adjustment firm can pay amazing dividends all along the line of employe relations if that firm is given cooperation by the employer as well as by the debtor and his creditors.

When the debt adjustment plan was brought into being in 1931 to help small debtors with the first shock of depression problems, it marked the beginning of a new business conception of individual debts. It gave due consideration to the debtor's obligations, his ability to pay, his personal and family welfare, the rights of his creditors, and his job security and efficiency. In a short time it was learned that job security and efficiency were the foundation of the new financial structure that was being built for the debtor. For unless he remained an efficient worker, his income was eventually cut off and his sole asset taken away. An important part of the sound debt and adjustment program, therefore, is directed to improve the worker's efficiency on the job and his relationships with fellow-workers and employers.

## *Method of Operation*

Under the debt adjustment plan, a debtor's obligations are established, his immediate financial status is examined to inventory his assets, and his future income is estimated and considered as an asset. His personal problems, family relationships, employment status, etc., are examined with sympathetic under-

*(Please turn to page 148)*

# NEWS SUMMARY OF THE MONTH

## National Oil Heat Exposition

THE NATIONAL OIL HEAT EXPOSITION that is to be held in Chicago's Coliseum of April 5th to 8th, marks the silver anniversary of the oil heating industry. Exposition is sponsored by the Oil Heat Institute of America and the Institute announced on December 24th that a total of 27,150 square feet of exhibition space had been reserved by manufacturers and other exhibitors. All this adds up to the largest area ever used for an exhibition in the industry. In conjunction with the Exposition the OHI will hold its annual convention and a record attendance is expected.

In announcing this sell-out of space Mr. R. S. Bohn, president of the OHI remarked that all the activities of the Institute—manufacturing, accessory, distribution, research and public relations—are growing and must continue to grow to meet a need of the industry for a central force for progress. It was also stated that the Exposition will embrace the entire oil heating and allied industries.

## Warm Air Ceiling Panel

ANOTHER MANUAL HAS BEEN DEVELOPED by the National Warm Air Heating & Air Conditioning Association—this one Manual 7-A on the subject of warm air ceiling panels. The manufacturer members of the Association have been urged to purchase supplies of this manual for distribution to their dealers since the interest in radiant heating is still high on the part of the prospective homebuilder.

It is estimated that the approximate additional cost of a warm air ceiling panel as compared with a conventional system is 1.50 per square yard of ceiling area. Since this system is patented it is also necessary to obtain a license for each installation. Fee for the license is \$5.00.

## Preserve OPA Records!

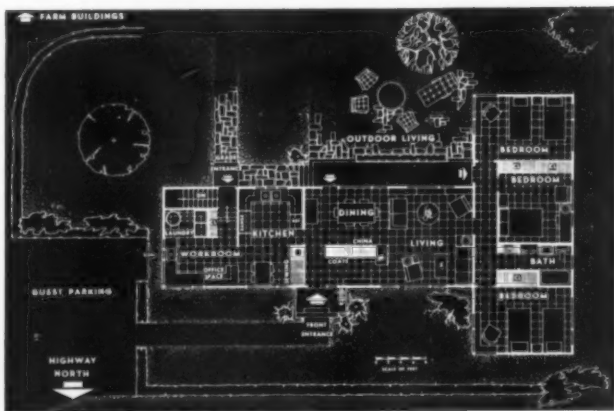
THE FEDERAL AGENCIES liquidating the Office of Price Administration recently announced that the time required for the preservation by business of records relating to commodities and services decontrolled by OPA has been extended for a period of two years to November 9, 1949.

An order issued by the Department of Agriculture, The Department of Commerce and the Reconstruction Finance Corporation, and approved by the Department of Justice, requires the preservation by all persons for an additional two-year period of "all records, documents, reports, books, accounts, invoices, sales lists, sales slips, orders, vouchers, contracts, receipts, bills of lading, correspondence, memoranda, and other papers, and drafts and copies thereof."

It was explained that expiration of the one-year record-keeping requirement on November 9, 1947, would have prevented the agencies involved from effectively performing their liquidating functions. The Department of Justice stated that the public interest required that the records be preserved in order to enable it to proceed with the prosecution of suits transferred to it when OPA was discontinued.

OHI Exposition Committee: C. R. Jonswold, J. A. Collings, chairman of OHI Distribution Division; J. H. Owens, chairman of OHI Accessory Division; A. E. Hess, managing director of OHI; R. S. Bohn, president, OHI; C. F. Curtin, secretary-treasurer; W. A. Matheson and L. A. Casler. Another committee member, Rudolph Gustafson, was absent when the picture was taken.





### A "Modern Design" Farmhouse

THE SMALL HOMES COUNCIL of the University of Illinois has issued a bulletin "A Basic Farmhouse Plan" that presents a plan for the up-to-date, business-like farm of the present era.

Designed on the system of modular planning the farmhouse offers a flexibility of arrangement that is calculated to take advantage of the physical characteristics of the farm property and also allow for expansion from a basic minimum area to a size that will meet the individual requirements of the farmer. The basic plan consists of two rectangular units, 16 feet wide, one the living and work area and the other the sleeping and bath area. These can be assembled in a variety of ways to conform with the farm site and the wishes of the individual. The plan of the house, illustrated on this page shows the attractiveness and utility of the unit.

Development of the plan was made possible by a grant from the *Farm Journal* of Philadelphia and one copy of the bulletin (C7.2) is available free with only a minimum charge for additional copies. This is the 19th bulletin of the Small Homes Council and they provide a significant segment of literature on the subject of planning and building the home. A set of all 19 bulletins may be obtained from the University for \$1.50 and anyone purchasing a set will be placed on a list to receive one copy of each succeeding bulletin to determine whether they can make use of the bulletins as they are published.

### Continuous Air Circulation

THE NATIONAL WARM AIR HEATING & Air Conditioning Association has announced the availability of the newly-developed Manual 6 of Practical Warm Air Heating covering the subject of Continuous Air Circulation. Along with the manual an attractive mailing piece for dealer use has been printed and newspaper mats have also been designed for the dealer to use in his local newspaper.

The manufacturers in the industry have received complete information from the Association on prices of the mailings which they can make to their distributors and dealers. Cooperation in this program by all manufacturers, distributors and dealers will be of great benefit to the industry as a whole and help consolidate the position of warm air as the foremost means for heating the home.

### Wage Rates Tied to BLS Index

THE MILWAUKEE SHEET METAL CONTRACTORS' ASSOCIATION has negotiated an agreement with Local No. 24 of the Sheet Metal Workers that ties the wage rate in Milwaukee directly to the cost of living index that is compiled quarterly by the Bureau of Labor Statistics. The method of operation follows.

The base to be used is January 1, 1941 which has been established as 100 in the BLS index and a date on which the wage rate was \$1.20 per hour. The index now stands at 165 so the rate in effect on April 1, 1948 will be \$2.00 an hour. This rate will prevail thru June. For July, August and September the index of March 15th will determine the wage scale. Wage for the final quarter of the year will be set by the index of June 15th.

Increases or decreases in the wage rate will be in amounts of 5 cents or multiples of 5 cents and if the index indicates a change that would result in less than a 5 cent variation the rate shall remain the same. A floor has been placed under the wage rate since there is a provision that it shall not go below \$2.00 an hour during the year of 1948.

The contract is to run for one year but may be renewed automatically if both sides are satisfied with its operation. There is no mention of the closed shop in the agreement since that question is being discussed by national representatives of the union and the Sheet Metal Contractors' National Association.

### Gas Safety Promoted

THE NATIONAL SAFETY COUNCIL has initiated a campaign to teach safety in the use of gas appliances and is receiving the full support of the American Gas Association and the entire gas industry. The Council has compiled a Safety Education Sheet on Cooking and Illuminating Gas which it is mailing to all schools to enable the teachers to educate the school children in the proper use of gas appliances. Gas utility companies are carrying on the campaign at local levels.

The data sheet points out that of 33,000 deaths in the home annually, less than 1,000 are due to utility gas asphyxiation and many of these are preventable. Fire losses from gas and gas appliances rank 20th on a list of 25 causes and the 1946 figures showed 5,000 fires with an aggregate loss of 4,400,000 out of a total of 608,000 fires causing a loss of \$580 million dollars.

The Education Sheet gives full information on the purchase of an approved appliance and its operation in conformance with all safety precautions.

### LP-Gas Sales in 1947

LIQUEFIED PETROLEUM GAS ASSOCIATION has released totals on consumption of LP-Gas in the year of 1947 and its use increased in all classifications.

Domestic use increased 31.8 per cent over 1946 to 1 billion gallons. There are now 4.5 million homes using LP-Gas. This makes a total of 20 per cent of all gas equipped homes using LPG.

Industrial use was up 11.8 per cent to 285 million gallons while the public utilities increased their utilization of LP 55.8 per cent to 135 million gallons.

The chemical industry also upped its usage of LP by 34.9 per cent to 415 million gallons.

# Incorporation

## Its Tax and Management Advantages

Joseph G. Dingle, CPA  
Ottawa, Illinois

*This article is an interesting summary of the benefits to be obtained by the small business that incorporates. It also discusses the business man's debt to the future (perpetuating his company) and how that debt can be paid.*

EVERY business has its own problems to work out but there are some problems common to many separate businesses. One of these is the problem of income tax. Another is the securing and holding of capable men. Both are of major importance and we shall here discuss them fully in the hope that our readers may find a means of retaining more of their hard earned profits in future years, and also begin to so rebuild their organization as to permit them to enjoy more leisure than has been possible during the past few years.

### Income Tax Savings

The current Income Tax law takes a very heavy portion of the profits accruing to an individually owned business. Corporations are taxed—under current laws—at rates ranging from 21% to 38%, while individual rates begin at 20% and advance rather rapidly until a maximum rate of 91% applies on all income over \$200,000.00. Of course, we are aware of the fact that not many of the Artisan readers are bothered with the income tax rates on incomes in excess of \$200,000.00 annually, but the fact remains that such rates do consume the major portion of the higher incomes. We shall, in our discussion, show the impact of the income tax on the income possible to the average business in the Warm Air Heating Industry; to the fellow operating in a small city and making from \$10,000.00 to \$20,000.00 per year—before considering compensation for his personal service. We call attention to the accompanying table of Current Income Tax Rates, for individuals and for corporations, and from this table we compute the income tax on a net income from an individually owned business having a 1947 profit—before salary of the proprietor—of \$15,000.00, thus:

Net Income		\$15,000.00
Less Deductions	\$ 500.00	
Exemption (Self & wife)	1,000.00	1,500.00
Net Taxable Income		13,500.00
Taxable as follows:		
First \$2,000.00 @ 20	400.00	
Next 2,000.00 @ 22	440.00	

Next 2,000.00 @ 26	520.00
Next 2,000.00 @ 30	600.00
Next 2,000.00 @ 34	680.00
Next 2,000.00 @ 38	760.00
Next 1,500.00 @ 43	645.00
Total Tax	4,045.00
Less 5%	202.25
Net Tax	3,842.75

While the minimum rate above is 20% and the maximum applicable rate of 43% applies to the \$1,500.00 in excess of \$12,000.00 the fact remains that out of \$15,000.00 net income the proprietor may retain only \$11,157.25 after squaring his account with his not-so-silent partner, the United States. Our business man must pay to the Federal Government \$25.62 out of each \$100.00 of the entire \$15,000.00 earned. That is the penalty for conducting his business as an individually owned enterprise.

Let's now apply the current tax rates to this same income earned by a corporation, before taking out the salary of the principal owner-officer, which we will fix at \$7,500.00 for the year.

Net Income (Before Salary)		\$15,000.00
Salary of principal		7,500.00
Net Corporate Income		7,500.00
Corporate Tax		
First \$5,000.00 @ 21%	1,050.00	
Next 2,500.00 @ 23%	575.00	
Total Corporate Tax		1,625.00
Individual Tax;		
Salary		7,500.00
Less Deductions	500.00	
Exemption (Self & Wife)	1,000.00	1,500.00
Net Taxable Income		6,000.00
Taxable as follows:		
First \$2,000.00 @ 20%	400.00	
Next 2,000.00 @ 22%	440.00	

Next 2,000.00 @ 26%	520.00
Total Tax	1,360.00
Less 5%	68.00
Net Individual Tax	1,292.00
Total Corporate and Individual Tax	2,917.00
Individual Tax on \$15,000.00	3,842.75
Net Saving	925.75

Thus, instead of paying \$25.62 out of each \$100.00 of profits, the corporation and the salaried principal combined will pay \$19.44 out of each \$100.00—a saving of \$6.18 per \$100.00 of profit.

As the income increases, so does the tax saving increase by use of the corporate set-up. If the profits were \$20,000.00 an individual proprietor would pay \$6,141.75; while the corporation would pay \$2,775.00 on income of \$12,500.00; and the individual would pay \$1,292.00 on a salary of \$7,500.00, or a total tax for the corporation and the individual of \$4,067.00; a saving of \$2,074.75. Under individual operation the tax would consume \$30.70 of each \$100.00 of profit, while under the corporation plan the tax would consume only \$20.33 of each 100.00.

#### Defer Dividends Temporarily

The tax computations above do not include any cash dividends paid by the corporation to its stockholder. If, in setting up the corporation, care is exercised to so capitalize the corporation that its earnings—after income taxes—are necessary to the normal requirements of the business, cash dividends may be avoided for several years, thereby preventing the imposition of income taxes on the stockholder on cash dividends. To illustrate, let's assume the individual proprietor owns the building occupied by his business. If, in setting up the corporation the building be retained by the individual and by him leased to his corporation, the amount of property to be set over to the corporation, on incorporation, is less by the value of such real estate. If the real estate has a value of say, \$25,000.00, it will require the net profits (after taxes) of two to three years to pay for the building as and when purchased by the corporation from the individual. In this way, the corporation may safely refrain from paying out a substantial part of its net profits as dividends, and thus be free from tax liability under Section 102 of the Revenue Act. This section imposes a tax of 27½% on the net earnings of a corporation (under \$100,000.00) where such corporation is availed of to prevent the imposition of income tax on its stockholders. While the subsequent purchase of the real estate may actually be for the purpose of preventing the imposition of the tax on the stockholder, it is, in our opinion, not such an act as will permit the imposition of the tax under Section 102; which section has a qualifying phrase which speaks of the accumulation of corporate profits "beyond the reasonable needs of the business." In other words, the use of corporate profits to acquire the real estate occupied by the corporation is not beyond the reasonable needs of the business.

There is another point worthy of consideration here. If the present individual owner incorporates and im-

mediately after incorporation owns 70% or more of the capital stock, the transfer of the property to the corporation must be at the transferor's adjusted cost, and, therefore a no gain—no loss transaction. If, however, the individual whose business is transferred to a corporation owns less than 70% of the stock of such corporation, he, the transferor, may sell such property to the corporation at its present value and be taxed upon such profits as are realized as a long term capital gain—provided of course, the property so transferred falls within the statutory definition of "capital assets."

#### Incorporation an Aid to Management

The average business man is unwilling to undertake a trip to a nearby community without a spare tire in

#### Current Income Tax Rates Individual Rates

Net Income	Rate for	Tax for	Cumulative
Cumulative	Bracket	Bracket	Tax
\$ 2,000.00	\$2,000.00	20%	\$ 400.00
4,000.00	2,000.00	22	440.00
6,000.00	2,000.00	26	520.00
8,000.00	2,000.00	30	600.00
10,000.00	2,000.00	34	680.00
12,000.00	2,000.00	38	760.00
14,000.00	2,000.00	43	860.00
16,000.00	2,000.00	47	940.00
18,000.00	2,000.00	50	1,000.00
20,000.00	2,000.00	53	1,060.00
22,000.00	2,000.00	56	1,120.00
26,000.00	4,000.00	59	2,360.00
32,000.00	6,000.00	62	3,720.00
38,000.00	6,000.00	65	3,900.00
44,000.00	6,000.00	69	4,140.00
50,000.00	6,000.00	72	4,320.20

#### Corporation Rates

Corporations having Net Income under \$25,000.00				
	Normal	Surtax	Total	Tax
First \$ 5,000.00	15%	6%	21%	\$1,050.00
Next 15,000.00	17%	6%	23%	3,450.00
Next 5,000.00	19%	6%	25%	1,250.00
Total Tax—\$25,000.00 Net Income				\$5,750.00
or a flat rate of 23%				
Income over \$25,000.00 but less than \$50,000.00				
Next \$25,000.00	31%	22%	53%	—————
Corporations having Net Income in excess of \$50,000.00				
Entire Amount	24%	14%	38%	—————

his car, yet there are many business men who are conducting their personally owned business—employing perhaps every penny they have accumulated over a long period of years, except, possibly their residence, and do not realize that there is no one to carry on the business should they become disabled or die. A trip without a spare tire may, in the event of a blow-out, delay the arrival at the desired destination by a few minutes. The disability or death of the principal in an individually owned and operated business means the junking of an otherwise success venture. The widow, without adequate management available, will

(Please turn to page 156)



## How's Business

↓  
DAVID MARKSTEIN  
New Orleans, La.

↓  
↓  
HOW'S BUSINESS—Right now you probably have no cause for complaints. But when C-Day (Competition) comes you will need advertising's help. Use the classified columns for top results with low cost.

**I**S THERE one place in which you can be sure that readers will *look* for your advertisement? A place in which all the readers *want* to read advertising? There is. And contractors who have used it report that advertising in this place pays off. The place in question is the classified advertising pages of the daily newspaper.

"But," say many heating and sheet metal men, "classified advertising is for renting houses and apartments. It is for selling real estate, hiring employees, or finding jobs. It is not a place in which our service can be sold." For the answer to that, there is the experience of one Southern contractor who, opening his firm on a very small capital, determined to make every dollar spent for advertising produce heavy results. He consulted specialists from his local newspaper, and was advised of the results that painters, flooring firms, bookkeeping companies, appliance dealers, and every other kind of small business had reported. The decision to use classified advertising was made.

"Now," he reports, "I'm so sold on classified space that, although the company has now grown to a point where we can compete in display advertising space with our competitors, we still put the biggest part of our advertising money into the classified pages."

### Success in Classified Columns

What is the secret for success in classified advertising? This heating and air conditioning contractor lists four main points: Choosing the right reader; offering him the right service; offering it in the way that will bring top results; and making the offer in a paper that is capable of delivering a heavy classified readership. These pointers, of course, apply to all

advertising. But there are special twists to the use of classified.

Take, for example, point one: choosing the right reader. Ordinarily, in display advertising space on the regular pages of the newspaper, it is possible to slant the ad specially for the type of reader who is a ripe prospect for the merchandise being offered. In the case of a moderately-priced heating deal, to rule out higher-income readers who would not be interested, a prominent price display might be made in the layout. Along with the wording of the headline, this would tend to give the advertisement a special appeal to readers who should naturally be interested. It is not possible to do all of these things on the classified pages. They are read by both men and women. Generally, the section is not read by wealthier persons. Therefore, the readers are primarily lower and middle-income groups. The headline must carry all of the burden of selecting the reader.

Point two of the contractor's classified advertising credo concerns offering the right merchandise and service. No intelligent merchant would open a shop selling high-priced goods in a neighborhood whose residents were all lower-income people. Nor would a smart merchant open at a swanky address and attempt to sell lower-priced merchandise. There is a direct connection between these examples and the services that will enjoy the highest sales from classified advertising space. Since most of the readers of the classified pages come from middle and lower-income groups, high-cost things will not enjoy a ready sale. (There are exceptions, of course. Many very wealthy men and women wouldn't miss the classified pages of their papers. But by and large, it is still a good rule of thumb.)

Since no illustrations can be shown, the copy, headline and price must do all of the selling work. People will buy a low-priced item sight-unseen much more readily than they will buy a higher-priced one. For that reason, the "right" deal becomes the traffic lines, the high-volume selling deals that will enjoy quick and ready acceptance, and will tend to draw into the office a traffic flow that—later—may result in sales of other lines as well as the ones advertised.

### Service to Reader

Offering what you have to sell in a way that will bring top results means that, in writing the copy, stress must be laid on what the work will do for the reader. All superfluous words must be eliminated. The copy must bear down on hard, intensive selling. *What the work will do for the customer* is the most important part of classified (and all other) advertising copy. How can this business of reader-benefit be woven into good selling copy?

The person who buys your services is not interested in the work as such. He is interested instead in what it will do for him. Joe Blow, the customer, may want, let us say, an office air conditioning job. He does not want this, because it is made by a well-known manufacturer, because it has a certain design, or because it will look pretty in his office. He wants the job for only one reason, and that is for the comfort that it will bring him. That is what the air conditioning has to offer the reader. The pointers about its design, its good looks, and the reliability of the manufacturer are important—but only as they tie to Joe Blow's main lookout, which is his own comfort.

In practice, what does this mean?

### Sales Pointers!

It means that effective copy will tie the sales pointers of the job (which are the contractor's-eye pointers) around the buying pointers (which are the customer's eye advantages). The fame of the manufacturer will be cited as a reason why the job will give maximum comfort and long-term service. That is what interests the customer—not the manufacturer's moniker. The design of the unit will be used as a reason why he gets an extra advantage—good looks—as well as top comfort. An extra advantage for him will help to sell more air conditioning. Mere design will not.

Every sales pointer should be turned into a buy pointer.

The fourth thing-to-watch is the paper that carries the advertising. Many contractors mistakenly choose the newspaper that has the least amount of advertising as the one in which to run their advertisements. They do this with both classified and regular display advertising, on the theory that other ads compete for attention with theirs, thus reducing the readership and lowering results. In theory that may sound fine. But it does not work out in practice. Here is what one successful user of classified advertising points out: "When we first began advertising, I had that idea myself—that the fewer the competing advertisements, the more my own ads would pull. I held the idea for a long time. I only gave it up when I discovered that our volume did not compare favorably with that of other

contractors; and that the increase we were enjoying due to postwar prosperity was considerably lower than our competitors.

"At first, I wondered whether advertising itself paid—because my own did not. Then I realized that it was a mistake to condemn a proven selling tool of such massive proportions as advertising merely because my company's advertising was not producing results. Finally, a friend who is an advertising man tipped me off. 'Do you know what a professional ad man would do if he were just arriving in a city and wanted to determine the best newspaper for producing results?' he asked me. 'He would look at the classified pages. The paper that carries the greatest volume of classified is almost always the best for both classified and display results. You can't count on it every time, but it's a good rule in nine out of ten cases.' From him, I learned several things about advertising. One is that the medium with the most advertising carries a heavy volume because it delivers heavy results, and the advertisers whose many insertions compete with one another for the readers' eyes would not be spending money if they did not see sales in return—sales that come in regardless of the competition among advertisers.

"Another thing I learned about how to use classified advertising for results is that if your advertisement is worded well, if you're selling something the customer wants at a price that compares well with that of your competitors, and if you slant your appeals skillfully, your advertisement will be read even if a thousand others surround it."

Since classified advertising is set apart from the rest of the paper, it is usually read in spare time. Housewives read it between their household chores. Business men read it on the way to work or at lunch. Classified is leisure-time reading matter. Because of this, your classified advertisements will pull strongest if you insert them at a time when there is the greatest leisure for reading. This means that Sunday newspaper insertions will outpull by far insertions on other days, often so much that the added cost of Sunday wordage is offset two and three times by increased sales. Saturday is also a "leisure" day, although not to so great a degree as Sunday, but Saturday ads are not recommended. The time lag of Saturday-to-Monday which elapses between reading the advertisement and acting upon it is too great.

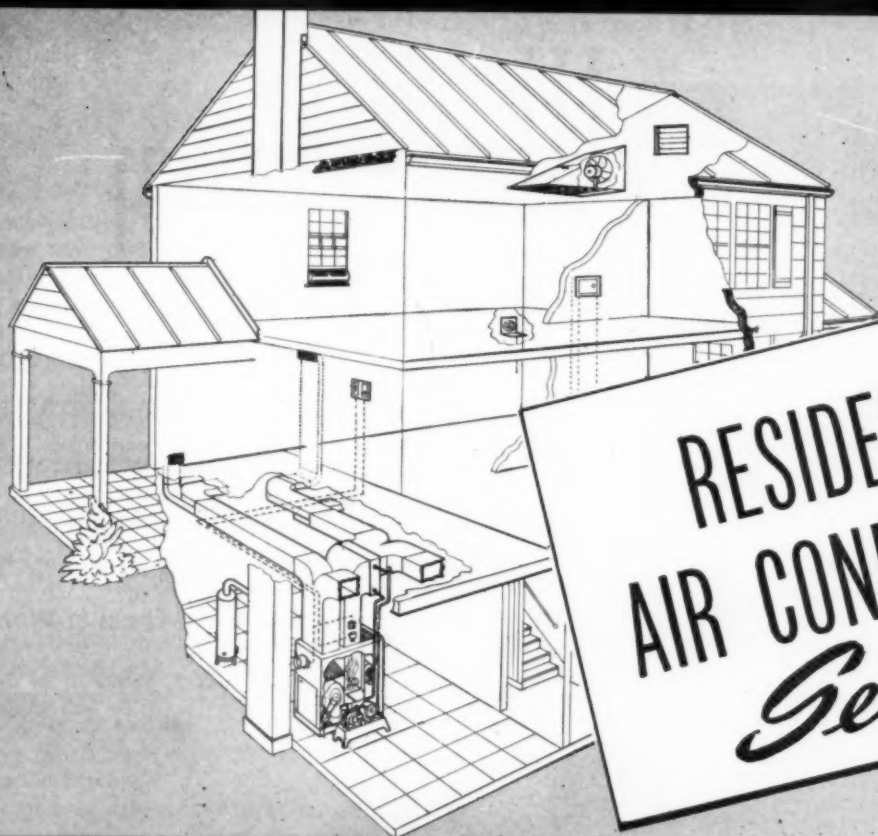
### Some Effective Rules

Here are some miscellaneous ideas found effective by successful contractors for pepping up the sellability of classified advertising:

1. *Write the copy long, then cut it to the bone.* In the first draft, include every point that comes to your mind. Then the copy can be cut and re-cut until no word remains that does not contribute heavily to producing sales. In the process, whole arguments that look weak when compared with the major "buy pointers" can be eliminated easily.

2. *Always give your address and name.* Advertisers report that the blind ad can never approach the addressed ad in results. A blind ad is one that gives only a box number or a telephone. The company name and

(Please turn to page 160)



# RESIDENTIAL AIR CONDITIONING *Section*

DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING



# Waterbury

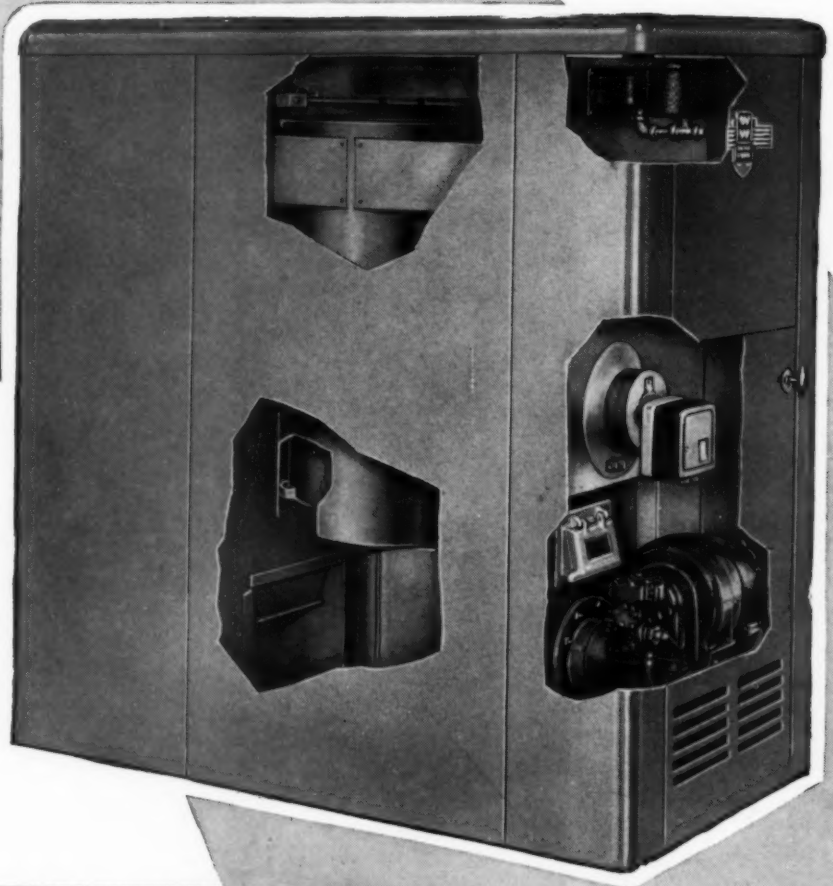
## Oil Fired Air Conditioner

Whether you are installing a simple gravity job or the most complete air conditioner, it's what's under the casing that counts for your customer's satisfaction—and for a trouble-free sale for you.

It's  
What's  
Under  
the Casing  
that  
Counts !

A modern compact, attractive unit, economical to buy—economical to operate. It is enclosed in an eye-appealing casing that is a compliment to the most modern basement—but what is equally important to you—because of the efficiency and quality of what is **UNDER** that casing, you are saved annoying service calls.

Furnaces for every size home and every type fuel — from gravity models to complete air conditioners.



**THE WATERMAN-WATERBURY COMPANY**

1122 Jackson St. N. E.

Minneapolis 13, Minn.

# The Short Course

**T**HE 1948 Short Course will be held at Michigan State College, East Lansing, March 22, 23, 24 and 25—Monday through Thursday, inclusive. This educational venture is jointly sponsored by the National Warm Air Heating & Air Conditioning Association and Michigan State College.

Some twenty years ago the National Warm Air Heating and Air Conditioning Association embarked upon the establishment of a training school for individuals—not necessarily members—who were engaged in or were planning to become engaged in the design, installation and operation of comfort conditioning of space using circulating air as a medium.

The primary object was to train men to do a better job in the field. One thousand, seven hundred men (and women) have attended the course. Each person has calculated heat loss, made duct layouts and selected equipment for a complete heating plant and has done the work under the eye of an instructor from industry. (The instructors are *not* college professors, but designers from the plants of manufacturers and installers.)

At the 1948 school, two problems will be offered:

For beginners and those particularly interested in small residences, three approaches will be made in plan—a gravity installation, conversion from gravity to blower, and a trunkline forced air plant.

For the advanced group who wish practice with the new Manual No. 9, the problem is a large ranch-type farm house, which is a real challenge to experience and ingenuity.

While no problem is offered in the panel heating field, one-half day will be given over to the design and operation of warm air panel heating by Manual 7A.

Another feature will be a controls clinic, giving special attention to the much discussed "Continuous Blower Operation."

## Lodgings

The hotel and room situation in East Lansing is not too good, but these dates are between terms when students are away, so the Housing Bureau has promised to take care of everyone who comes. Arrangements have been made to lunch and dine together. The total cost of meals, room and supplies will be about \$35.00 for the four days. Do not stay away because you have not made reservations.

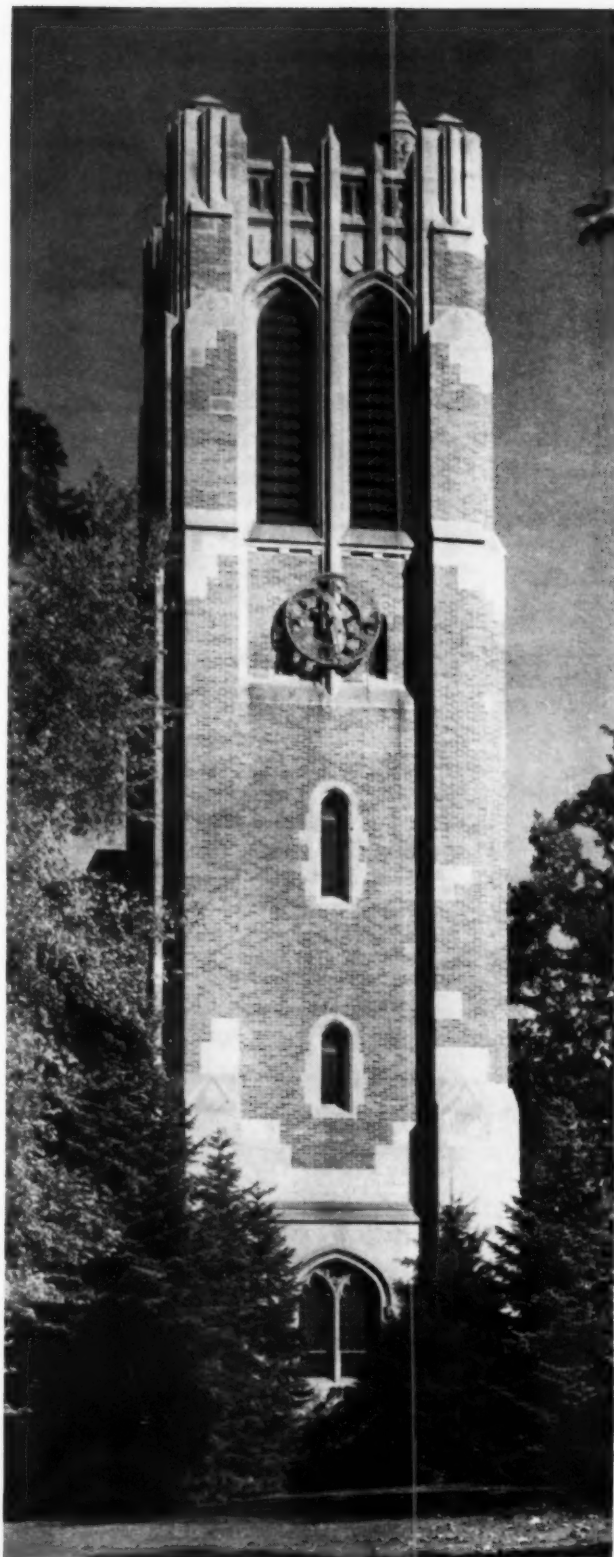
## Teachers

Many of the teachers have served year after year, for nearly the whole period. Some of them are ready to retire. Manufacturer members of the NWAH&ACA should plan to spare at least one of their young engineering members each year to attend the Short Course, so that they can be used as instructors.

The invitation to attend is extended to three groups:

First, the beginners who will receive some excellent instruction.

Second, the experienced men who may get acquainted with some new codes and exchange ideas with others of different experience.



*Beaumont Carillon Tower is on the original site of the first building in America devoted to the teaching of agriculture. Michigan State College cherishes its distinction of being the oldest of the 48 land grant colleges.*

Third, the young engineers who will undergo an apprenticeship in teaching in preparation for schools as well as wider service in the industry.

### The Program

#### 17th ANNUAL

Forced Warm Air Conference  
Room 111 Olds Hall of Engineering

March 22-25, 1948

Chairman—Prof. C. H. Pesterfield

Monday, March 22, 1948

9:30 Registration

10:00 "A Survey of the Premises for Good & Bad Construction"; Robert Champlin, Richmond Radiator Company

12:00 Luncheon

Speaker: Ed Root, Jackson & Church Co., "Resistances of Ducts & Fittings."

2:00 Two Problems are offered:

1. A small Residence, suitable for beginners will be heated by gravity, converted to forced and then redesigned for a forced trunk line system.
2. A large ranch type country house will challenge the more advanced group to use Manual 9.

6:30 Dinner. NWAH&ACA Night

Some entertainment and then Bob Waalkes will discuss the Association schools & manuals

Tuesday, March 23, 1948

Chairman—Homer Brundage, The Brundage Co.

9:00 Classes will meet in respective class rooms

12:30 Luncheon

Speaker: Lou Reining, District Representative Automatic Humidifier Co. & The Brundage Co., "Humidity & Humidification."

2:00 "Background for Controls," B. F. McLouth, Dole Valve Co.

"Fundamentals of Controls," W. C. Nessell, Minneapolis-Honeywell Reg. Co.

"Application of Controls to Oil Burners," Lyle Buttery, E. M. Sergeant Fuel Oil Service, Inc., Kalamazoo.

"Application of Controls to Gas Burner," Jim Woodson, Contractor-Dealer, Detroit.

"Application of Controls to Stokers," Paul Doane, District Rep. "Kolmaster," Lansing.

"Summary Thermostats, Limit Controls & Blower Controls."

6:30 Dinner

Controls Round Table, B. F. McLouth, Moderator, and representatives from Minneapolis-Honeywell Regulator Co., Perfex Corp., Penn Electric Switch Co., White-Rogers Electric Co., Mercoid Corp., Detroit Lubricator Co. This will include the details of continuous blower operation.

Wednesday, March 24, 1948

Chairman—C. L. Sapp, Farquhar Co.

9:00 Classes meeting in assigned class rooms for calculation and discussion.

12:30 Luncheon

Speaker: Prof. James M. Apple, M.C.S., "Job Study & Motion Economy."

2:00 Classes continue design.

6:30 Banquet with Western Michigan Chapter of the American Society of Heating & Ventilating Engineers. Frank Harben, Chapter President, Home Furnace Co., Holland, Toastmaster. Speaker: Gordon Volkenand, Physicist, Minneapolis-Honeywell Regulator Co.

Thursday, March 25, 1948

Chairman—Prof. Lorin G. Miller

9:00 Classes will *complete* the assigned design.

12:30 Luncheon

"Selling Warm Air Heating."

2:00 Room 111, Olds Hall, Panel Heating. "The Manual 7-A." Bill Redrup, The Majestic Co. "Using the Manual." Clarence Grandstaff, C. A. Olsen Co. Demonstration of Fitting Resistances. Professors, J. M. Campbell & D. J. Renwick.

#### INSTRUCTORS:

Advanced: (Large Residence)

Charles Lowe, Jackson & Church, Chairman  
Kenneth Robinson, Mich. State Health Dept.  
Ross Wallis, Meyer Furnace Co.  
C. H. Pesterfield, Mich. State College

Beginners: (Small House)

Paul Barthold, Kalamazoo Stove Co., Chairman  
Ward Brundage, The Brundage Co.  
Clarence Grandstaff, C. A. Olsen Mfg. Co.  
Frank Harben, Home Furnace Co.  
Robert Champlin, Richmond Radiator Co.  
Robert Waalkes, National Warm Air Heating & Air Conditioning Assn.  
Robert Roose, University of Illinois  
Francis Hockensmith, Lennox Furnace Co.

#### SUPERVISORS & INSTRUCTORS AT LARGE—honorary

Fred Bishop, The Brundage Co.  
Ed Root, Jackson & Church  
Earle Maynard, Timken Silent Automatic

#### THE TECHNICAL EDUCATION COMMITTEE

Homer Brundage, The Brundage Co.  
Clarence Grandstaff, C. A. Olsen Mfg. Co.  
Francis Hockensmith, Lennox Furnace Co.  
E. B. Root, Jackson & Church Co.  
B. F. McLouth, Dole Valve Co.  
C. L. Sapp, Farquhar  
Ross Wallis, Meyer Furnace Co.  
Chairman: L. G. Miller, Mich. State College

# Correct Practice In Oil Heating

## Part XI *Installing the Thermostat—Gravity Warm Air Wiring* *—Forced Warm Air Wiring—List of Check-Points.*

By J. J. Mirabile

Delco-Heat Division

Elliott-Lewis Co., Philadelphia

**B**EFORE installing your first job, it is best to become acquainted with your local codes and ordinances. If your locality is not covered by a local code, then follow the National Electrical Code. After completing the job, work with the local Underwriter Inspector. Have him check and inspect your wiring. You will find him very cooperative, and if asked, he will offer suggestions that will prove helpful on your next job. If your wiring complies with the code, it will be passed and a certificate will be issued. If it does not comply, he will tell you why it does not meet with the requirements for a safe installation. After you make the necessary corrections, he will issue a certificate of approval. The local power company will gladly give you the name of the local inspector. In every case, for your own protection, have all your installations inspected by the local NBFU inspector.

### *Installing the Thermostat*

The room thermostat is usually mounted on a living room wall where it is actuated by average room temperature conditions. It can be adjusted to compensate for well insulated buildings, or for buildings that are poorly insulated. It can also be adjusted for sluggish heating systems as well as systems that have a fast pick-up. However, it cannot be compensated for local influences, and so must be located away from hot or cold pipes and ducts. It must not be located where the sun or heat from an appliance will influence its operation. A radio or lamp placed under the thermostat will affect it when either is turned on. The heat given off by the tubes or the light bulb will cause the thermostat to operate under a false temperature condition.

If a finish nail is driven through the floor near the baseboard, directly below the selected thermostat location, the nail can be used to measure to the center of the partition in the basement. A  $\frac{1}{2}$  inch hole is then drilled up through the sub-flooring and plate, between the walls forming the partition. Push a rod or rule up through the hole into the partition to be certain that the partition does not have cross braces which would prevent fishing the thermostat wires up the partition. Drill a  $\frac{1}{2}$  inch hole in the wall directly above the finish nail that was driven into the floor near the baseboard. This hole should be between 4 and  $4\frac{1}{2}$  feet above the

floor. Do not mount the thermostat too high, or too low where small children can reach it.

Drop one end of a light chain, about 10 feet long, down the hole and allow several inches to rest on the plate at the bottom of the partition. After anchoring the chain so it cannot be pulled through, go to the basement, and with a hooked piece of wire, fish the chain out of the partition.

Now push back about three inches of the waxed cloth covering the thermostat wire, cut the three wires, and then stretch out the covering, giving you about three inches to use to tie the thermostat cable to the chain. From the thermostat location upstairs, pull up the chain and cable until you have about 18 inches of cable outside the hole. Now fasten the room thermostat to the wall as directed by the manufacturer. Do not distort the base of the thermostat. When the wires are connected, push the excess wire back into the partition. Always leave from 12 to 18 inches of cable in the partition. This will assist the service man if the thermostat must ever be removed or replaced. Seal the hole in the wall behind the thermostat and the hole at the bottom of the partition with soft paper or felt. This will prevent a draft through the thermostat which would give a false temperature condition in the control.

Run the thermostat cable over to the furnace, and after the conduit is erected, continue the cable to the stack relay. The cable should be run along pipes, conduit, or BX which act as a protection when it is strung across the basement joists.

### *Gravity Warm Air Wiring*

Mount the stack relay between the furnace and the draft regulator. If possible, there should be about 12 inches between the relay and the regulator so there is no chance for the air coming through the regulator to strike the element of the relay.

Next, fasten a junction box on a joist and cut and bend the lengths of conduit as shown in Fig. 1. Cut a hole in the cement floor at least  $1\frac{1}{2}$  inches deep. Fasten a strap on the joist to support the conduit (NEC does not permit supporting the conduit by the box).

Mount the fused line switch within 18 inches of the meter or fuse cabinet and run BX over to the junction box. Ground the BX where it passes over a cold water

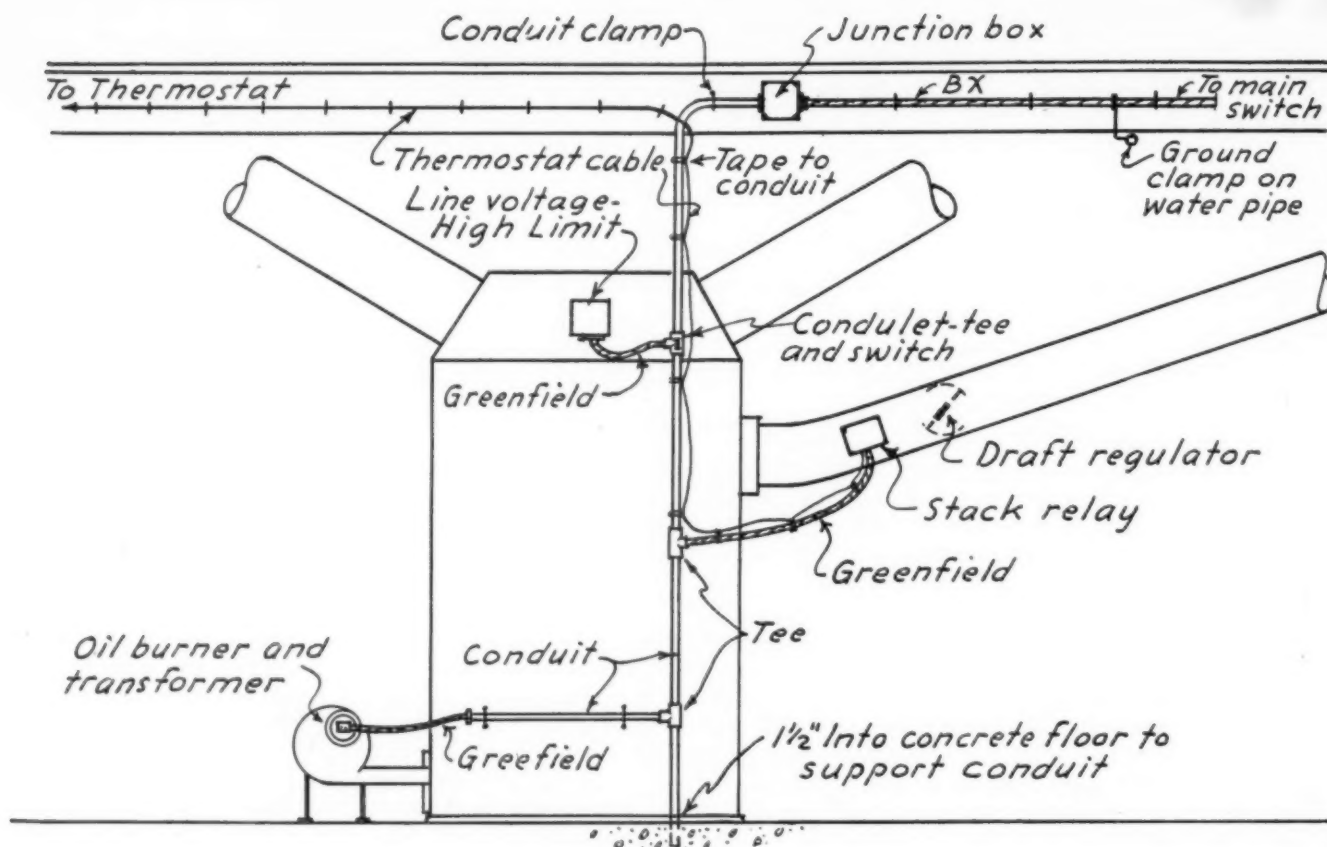


Fig. 1—Gravity warm air wiring.

pipe. If the BX does not come near a cold water pipe, use No. 8 armored ground wire to ground the conduit oil burner circuit to the nearest cold water pipe. This is important because it complies with the code and eliminates 99 per cent of radio interference.

Pull a black (hot) wire through the top conduit from the box to the condulet tee and switch. Cut and connect to one side of the switch. Now run another wire through the Greenfield to the limit control and connect to one of the limit control terminals. Cut the wire at the switch and connect to the other side switch. Then cut a length long enough to go down through the next conduit to the middle tee and over through the Greenfield to the relay. Cut and connect to the other limit control terminal and the No. 1 terminal of the relay. This eliminates connections.

Next pull through two white (ground) wires from the box to the No. 2 terminal of the relay, and the other to the common ground of the oil burner motor and transformer. This also eliminates connections.

Pull a red wire from No. 4 terminal of the relay to the transformer and a black wire from the No. 3 terminal of the relay to the motor. It is best to cut all wires to length and pull them through the conduit and through the Greenfield at one time, then proceed with making the connections at the terminals. Be certain that the conduit has been reamed and that there are no sharp edges in the metal armor. Use red anti-short bushings at all BX connections.

Fasten the conduit to the casing with metal straps. Have the Greenfield flexible (not taut) so that the limit control and relay may be readily removed for cleaning the element, etc. The Greenfield to the burner

should be flexible to cut down the possibility of transmitting sound from the burner motor to the conduit.

Now run the thermostat cable down to the relay. Using friction tape, tape it at frequent intervals to the outside of the conduit which will act as a support. Do not run the low voltage thermostat cable inside the conduit with the 110 volt circuit (NEC requirement). Always be careful not to drive staples through the thermostat cable. Also, sheath the cable with loom where it passes over sharp edges or other places where it may need protection. When you have completed the work, be certain that all your connections, locknuts, etc. are tight. If they become loose, radio interference is possible because the condenser in the transformer is grounded to the transformer case. When the Greenfield is connected to the transformer the metal will carry the ground of the condenser back through the ground clamp to the ground. A loose connection in the conduit will break this ground circuit making radio interference possible. The ground clamp also grounds the motor (NEC requirement).

Cement the conduit inserted in the hole in the cement floor.

Install a fusetron or 10 ampere regular fuse in the line switch. Connect the circuit to the fuse panel. Before making the connections be sure you are connecting to the correct voltage. If the meter is supplied with 110 volts there will be two wires feeding the meter. However, if the meter is supplied with 220 volts, the service to the meter will have three wires; two will have 110 volts each and the third will be neutral (ground); this is usually the center wire. To connect for 110 volts proceed as follows:

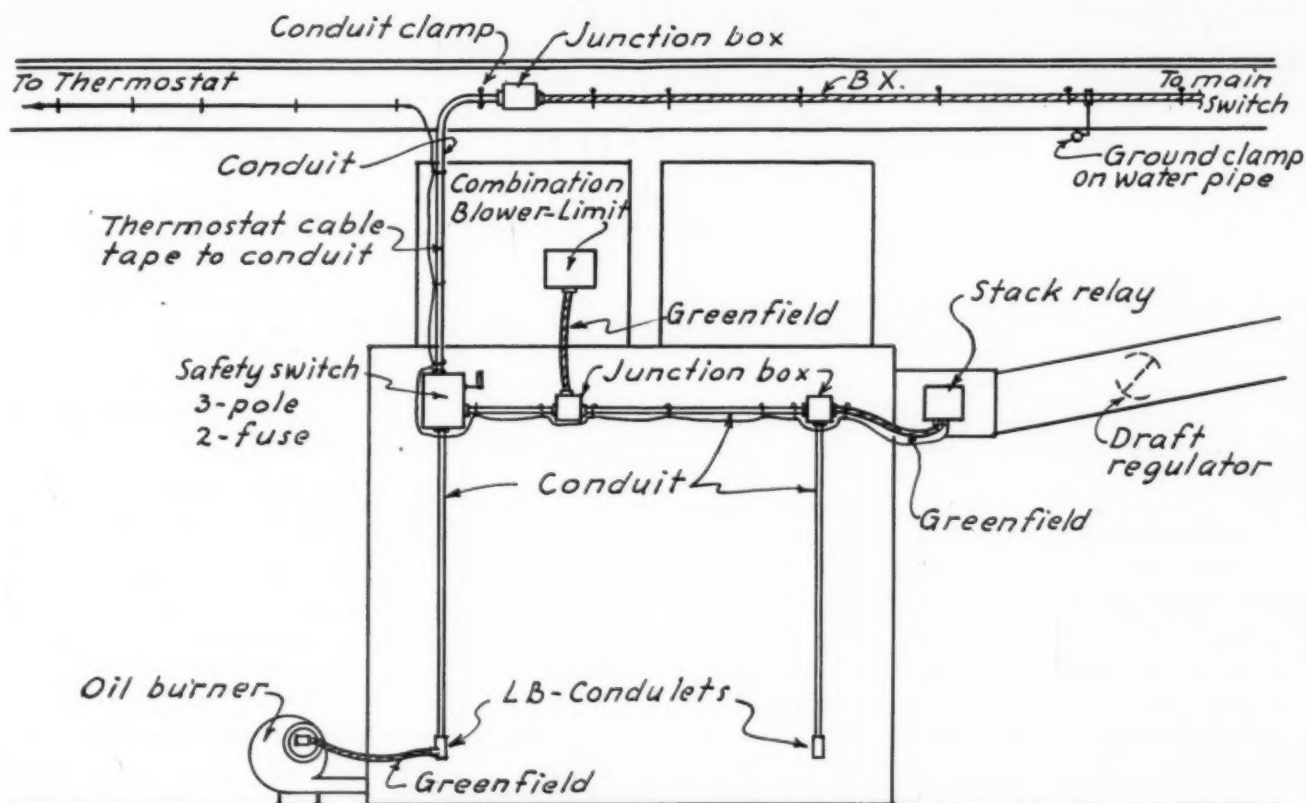


Fig. 2—Forced warm air wiring.

To check which of the wires will supply 110 volts always use a 220 volt bulb in a test socket. The two outside wires should give a bright light. When the test lamp is connected to one outside wire and the center wire, the test lamp should give a dim light. If the voltage specified on the controls and equipment is 110 volts, the oil burner circuit may then be connected to the proper terminals.

#### Forced Warm Air Wiring

Forced warm air oil burner wiring has an additional circuit for the fan motor. Fig. 2 shows a 3 pole double fused switch used in this circuit. One side of the switch is for the fan motor and the other for the burner motor. This arrangement is preferable because one switch opens both circuits, and at the same time gives individual over-load protection.

If the electrical wiring is mounted on the equipment, it is well to remember that the NEC limits the temperature of rubber wire to 120 F ambient temperature. That means if the temperature around the wire is more than 120 F, asbestos covered wire must be used.

The conduit, control, and wiring arrangement in Fig. 2 may be changed to suit local conditions. However, it is best to standardize on a simple arrangement for both gravity and forced air systems so proper tees, switches, connections, etc., will be sent to the job.

If standard methods are used, the installation men will wire all jobs alike, thereby using the same material on practically all jobs. The service men will know that all jobs are wired alike and thereby minimize service labor. Always use good approved material,

good solderless connections. Insist on neatness and it will pay dividends.

It is well to remember these things:

1. Have the safety switch readily accessible.
2. Properly support conduit and BX cable.
3. Ground the conduit of the circuit.
4. Fuse separate circuits.
5. Keep line switches within 18" of meter box.
6. Insert a proper size fuse or fusetron.
7. Keep wiring away from hot surfaces.
8. Do not run wires where they are liable to external damage.
9. Use anti-shorts at all BX connections.
10. Check all the controls.
11. Check the operation of the relay safety switch.
12. Check the operation of the limit control.
13. Work out various BX and conduit combinations to simplify the wiring and also appearance.
14. Be certain that the heating element in the thermostat is the correct one. The type relay controlled by the thermostat determines the heating element.
15. Have all connections, locknuts, etc. tight.
16. Have wires clean where they connect to terminals.
17. Do not drive staples through the thermostat cable.
18. Follow local and national codes.
19. Have all wiring jobs inspected.
20. The main switch must control all circuits. Always connect equipment to the load side of the main switch.

# Pattern Development for Air Conditioning Fittings\*

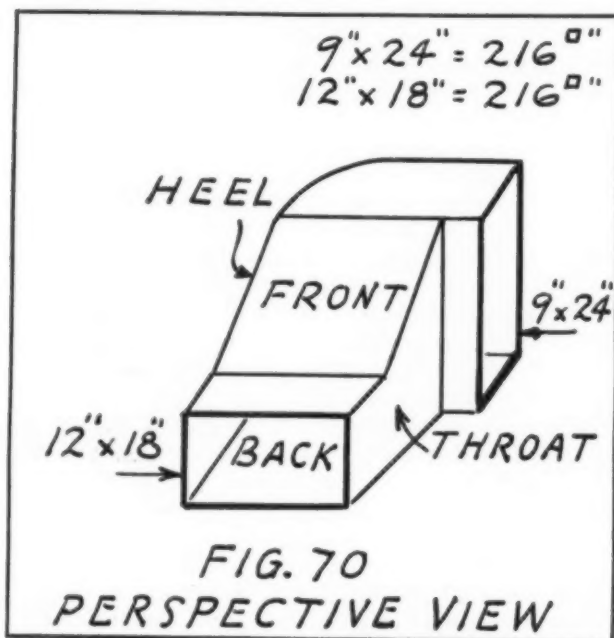
By William Neubecker

## Flat Back Curved Transition

FIG. 70 shows a perspective view of the fitting for which patterns are requested. This is a right angular elbow with a flat back whose horizontal inlet measures 12 by 18 inches and whose vertical outlet measures 9 by 24 inches. 12 by 18 inches is the given size of the horizontal duct and 9 inches is to be the narrow side of the vertical duct. The depth of the vertical duct must be computed so that the area of both ducts will be similar. Since 12" by 18" is equal to 216 sq. in. dividing that figure by 9" indicates a depth of 24" for the vertical outlet. In Fig. 71 are shown the front and side elevations and the net pattern shapes. Full size measurements are shown. The side elevation shows the line of the flat back  $A^{\circ}-A^{\circ}$  also the 9 by 24 inch outlet and the narrow 12 inch side of the inlet. The front elevation shows the curved heel struck with an 18 inch radius, the 5 inch collar at the top and the 18 inch length of the inlet. Having drawn the front and side elevations in their proper positions as shown, the patterns can now be laid out.

### NET PATTERN FOR BACK

The outline of the front elevation is also the net



\* All Rights Reserved.

pattern for the back of the fitting as indicated in the side elevation by the line  $A^{\circ}-A^{\circ}$ .

### NET PATTERN FOR THROAT

$A-11-12$  in front elevation shows the profile of the throat. As  $A-11$  in front elevation is on a vertical plane, then  $A^{\circ}-11^{\circ}-6^{\circ}-9^{\circ}-10^{\circ}$  in side elevation will be the pattern shape, to which must be added the collar  $11-12$  in front elevation as shown by  $11^{\circ}-12^{\circ}$  in side elevation. From  $12^{\circ}$  draw the horizontal line  $12^{\circ}-12^{\circ}$ . Then  $12^{\circ}-12^{\circ}-10^{\circ}-A^{\circ}-12^{\circ}$  will be the desired pattern shape.

### LAYING OUT NET PATTERN FOR HEEL

Space the arc 2-6 in front elevation in equal divisions as shown by the small figure 3-4-5 and 6. Also space the arc 6 to 8 as shown by the divisions 7 and 8. Number the collar 9 and 10 as shown. From the various divisions 1 to 10 draw horizontal lines to the right, to intersect the profile in side elevation as indicated by similar numbers  $1^{\circ}$  to  $10^{\circ}$ . Now extend the line  $A^{\circ}-A^{\circ}$  in side elevation as shown by  $A^{\circ}-10^{\circ}$ . Starting from point 1 on this line, lay off the girth or stretchout of the heel 1 to 10 in front elevation as shown by similar numbers 1 to 10 on the stretchout line.

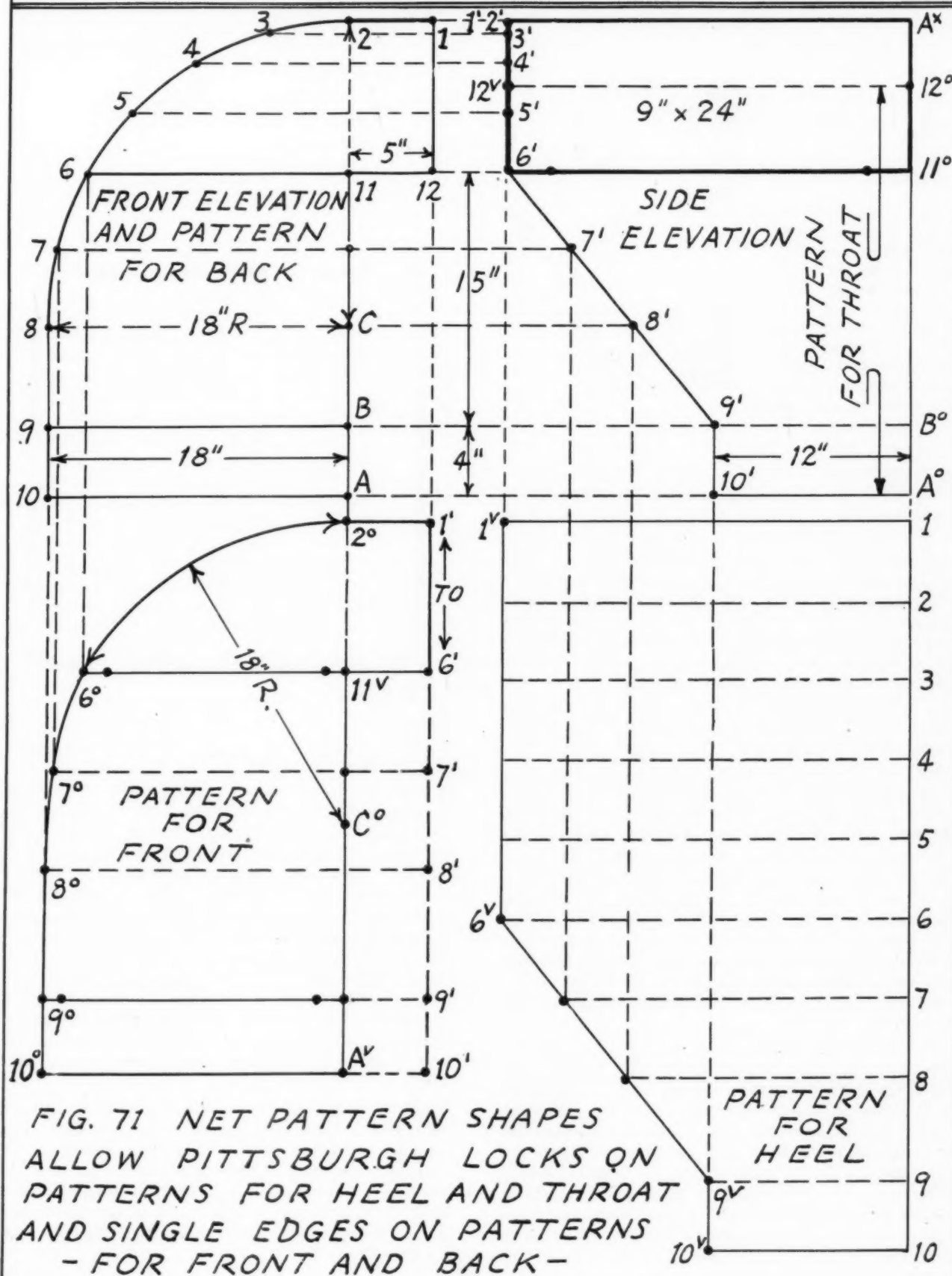
Through these divisions at right angles to the line 1-10 draw lines as shown which intersect by perpendicular lines drawn from similar numbered divisions  $1^{\circ}$  to  $10^{\circ}$  in the side elevation, thus obtaining the points of intersections  $1^{\circ}$  to  $10^{\circ}$ .

Connect lines in the heel pattern from  $1^{\circ}$  to  $6^{\circ}$  to  $9^{\circ}$  to  $10^{\circ}$  which will complete the desired net pattern for heel.

Extend the line 1-12 in front elevation as shown by 1-10', on which transfer the various divisions  $1^{\circ}$  to  $10^{\circ}$  in side elevation, as shown from  $1^{\circ}$  to  $10^{\circ}$  in the front pattern. Through these divisions at right angles to 1'-10' draw lines as shown and intersect them by perpendicular lines drawn from similar numbered divisions in the front elevation, thus obtaining the points of intersections  $2^{\circ}$  to  $10^{\circ}$ . Now with a radius equal to 18 inches and using  $2^{\circ}$  in the front pattern as center, intersect the line  $11^{\circ}-A^{\circ}$  at  $C^{\circ}$ .

Using  $C^{\circ}$  as center with the same radius describe the arc  $2^{\circ}$  to  $6^{\circ}$ . Then,  $6^{\circ}-2^{\circ}-1^{\circ}-6^{\circ}-11^{\circ}-6^{\circ}$  will be a reproduction of similar numbered outline in the front elevation. Now trace the curved line from  $6^{\circ}$  to  $8^{\circ}$  in the pattern for front and draw a line from  $8^{\circ}$  to  $10^{\circ}$  to  $A^{\circ}$  to  $11^{\circ}$  to  $6^{\circ}$  to  $1^{\circ}$  to  $2^{\circ}$  to complete the net pattern shape for front. Locks should be allowed on the various pattern shape as mentioned on the full page drawing Fig. 71.

**PATTERNS FOR FLAT BACK CURVED TRANSITION FROM  
A HORIZONTAL RECTANGLE TO A VERTICAL RECTANGLE  
OF DIFFERENT DIMENSIONS HAVING SIMILAR AREA THROUGHOUT**



# OPEN FOR DISCUSSION

## It's A Crime!

By  
Surewarm Homes

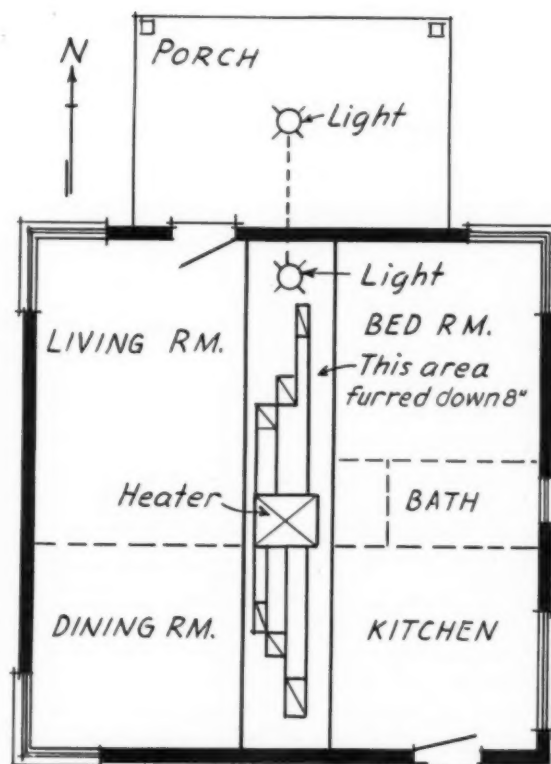
This is the first of a series dealing with the difficulties that are often encountered in the installation and operation of warm air heating systems. If you have an interesting case history, send it to us. Payment at regular rates.



AS YOUR special investigator I must make a confession that I am, like yourself, human and have made many mistakes of my own. There are several skeletons in my closet. The following series of crimes by other journeymen in the trade against the heating contractor, and in some cases the heating contractor's crime against himself, were all unknowingly committed. This did not lessen the seriousness of the crime, and although each crime has been picked for its pattern, I hope that these patterns in some way may help you uncover the cause and solve one of your own problems. If this is accomplished in only one case a year, the reading of these episodes will be well worth your while.

**CASE #1.** The scene of the crime was a two-story square home 25 x 25 feet, no basement, and with a utility room located in the center of the building on the first floor. A highboy forced air gas fired furnace was the means of heating. The home faced north, and the heating ducts ran through a space extending north and south through the center of the building. The home had been lived in for one complete season, and although the occupants had not stinted on the amount of blackmail paid the local utility, the home still was as cold as the kiss of death. Plenty of investigation had been done by all parties involved, and to no avail.

It was a bleak November afternoon, and your investigator was anticipating an evening by his cozy fireside with a good mystery novel, or the alternative of listening to Inner Sanctum, when the squeaking door of his own sanctuary opened and a very harassed architect introduced himself. He insisted that I accompany him to the scene of the crime. Your investigator was rather reluctant to leave his comfortable surroundings until assured of proper remuneration in the coin of the realm. So, always being willing to help a person in need, I journeyed to the scene of the crime.



FIRST FLOOR CEILING PLAN

Upon arriving there, I asked to be shown the way to the attic. I had a feeling that everyone usually starts at the bottom and works up, and since that had been done in this case with no results, I would start at the top and work down (my methods have always brought the comment that I worked backwards). However, in this case there was no attic to start with so I had to be content with the second floor. Investigating, I found all of the warm air leads were on inside walls and had no means of being chilled by coming in contact with the outside walls. However, I did notice that the temperature of the air coming out of the registers on the north side of the home was considerably cooler than the air coming from the registers on the south side, the second floor registers being low sidewall. On returning to the main floor I found the same condition to be true there, although the registers in that case were on the high sidewall.

As I previously mentioned, the trunk line and all the leads were in the section furred down from the ceiling running north and south through the center of the building. Referring to the diagram of the scene of the crime, you will notice the porch on the front of the building, with a light in the center of the porch ceiling. With these facts and the enclosed diagram, can you solve this crime?

(See page 150)

# Ductwork Estimating Tables, No. 3

By E. B. Root  
Jackson & Church Co.  
Saginaw, Mich.

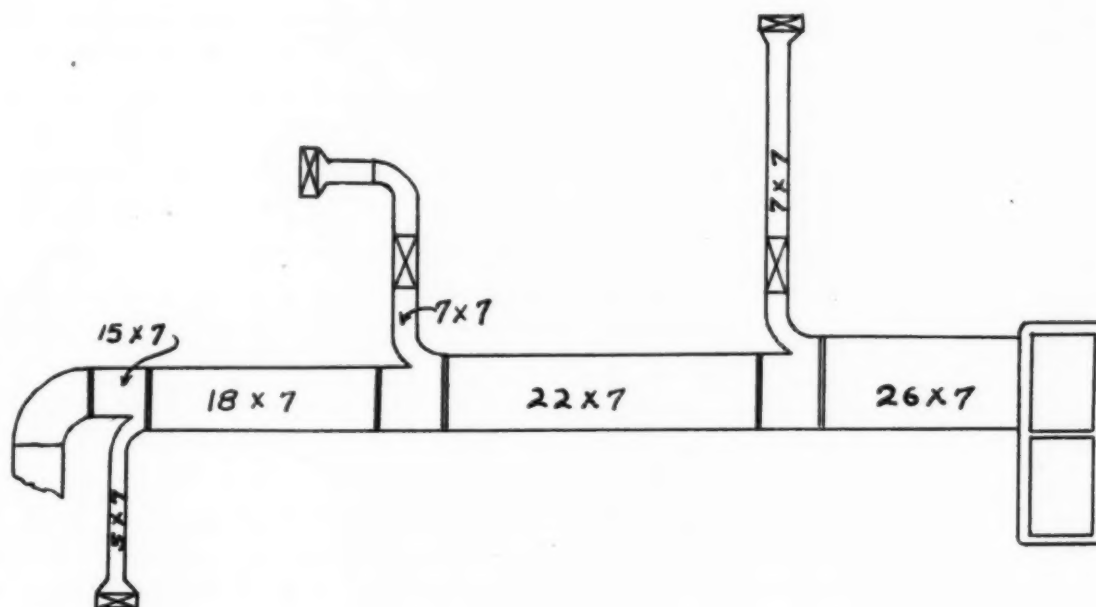
THESE charts are published for the purpose of determining the cost of fabricating a duct system, but are not intended to be used as a method of design. The object, of course, is to enable the estimator to arrive at his costs without going too much into detail.

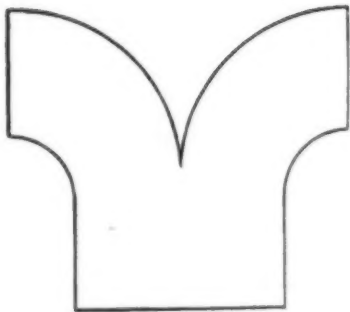
"The location of supplies and returns can be spotted on the basement plan and the duct sizes indicated on a single line drawing as suggested in Article 6, Section 1 (a) of the Technical Code. Without going further into detail it is a simple matter to list the various duct sections and in two columns opposite each item indicate the time and weight.

"After all of the material has been listed, the total of these two columns will give the weight of material, including waste, and time required for fabrication.

This can best be illustrated by the following section of a duct system and list of material."

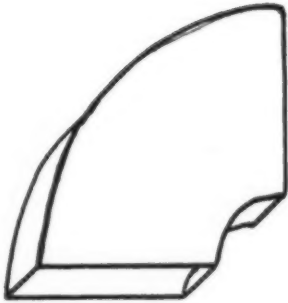
No. of Pieces	Items	Weight, Pounds	Time, Minutes
1	W. A. Plenum.....	21.0	60
1	26x7 to 22x7—(7x7 Br.).....	15.5	60
1	22x7 to 18x7—(7x7 Br.).....	14.1	45
1	18x7 to 15x7—(5x7 Br.).....	12.8	45
2	7x7 Vertical Offsets.....	6.4	25
1	7x7 Ell.....	3.9	35
1	15x7 Ell.....	10.3	50
2	7x7 Transitions.....	6.0	90
1	5x7 Transitions.....	3.0	45
5'	26x7 Pipe.....	27.2	30
5'	7x7 Pipe.....	12.9	30
8'	22x7 Pipe.....	38.6	30
2'	7x7 Pipe.....	5.1	20
6'	18x7 Pipe.....	25.4	30
5'	5x7 Pipe.....	11.4	30
Total		209.7	625" (17 hrs. 25 min.)





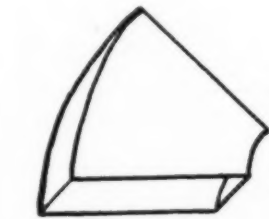
WEIGHT AND TIME FOR Y JOINTS

Duct		7"		8"		9"		10"		12"	
Width	Gauge	Weight	Time	Weight	Time	Weight	Time	Weight	Time	Weight	Time
44	24	57.9	120'	59.0	120'	60.2	120'	61.3	120'	63.6	120'
42	24	54.0	110'	55.1	110'	56.2	110'	57.3	110'	59.5	110'
40	24	50.1	100'	51.2	100'	52.2	100'	53.3	100'	55.4	100'
38	24	46.1	90'	47.1	90'	48.2	90'	49.2	90'	51.3	90'
36	24	42.2	90'	43.2	90'	44.2	90'	45.2	90'	47.2	90'
34	24	38.3	90'	39.3	90'	40.2	90'	41.2	90'	43.1	90'
32	26	26.7	80'	27.4	80'	28.1	80'	28.8	80'	30.2	80'
30	26	24.3	70'	25.0	70'	25.7	70'	26.4	70'	27.8	70'
28	26	22.1	60'	22.8	60'	23.5	60'	24.1	60'	25.4	60'
26	26	19.9	60'	20.5	60'	21.2	60'	21.8	60'	23.0	60'
24	26	17.6	60'	18.2	60'	18.8	60'	19.4	60'	20.6	60'
22	26	15.4	60'	16.0	60'	16.6	60'	17.1	60'	18.2	60'
20	26	14.4	50'	15.0	50'	15.5	50'	16.0	50'	17.0	50'
18	26	13.3	50'	13.8	50'	14.3	50'	14.8	50'	15.8	50'
16	26	12.3	50'	12.8	50'	13.3	50'	13.7	50'	14.6	50'
14	26	11.2	45'	11.7	45'	12.1	45'	12.1	45'	13.4	45'
12	26	10.2	45'	10.6	45'	11.0	45'	11.4	45'	12.2	45'
10	26	9.1	45'	9.5	45'	9.8	45'	10.2	45'	11.0	45'
8	26	8.0	45'	8.4	45'	8.8	45'	9.1	45'	9.8	45'



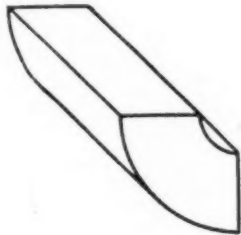
WEIGHT AND TIME FOR BROADWAY ELBOWS

Duct		7"		8"		9"		10"		12"	
Width	Gauge	Weight	Time	Weight	Time	Weight	Time	Weight	Time	Weight	Time
44	24	80.	150'	80.9	150'	81.8	150'	82.6	150'	86.4	150'
42	24	73.5	140'	74.3	140'	75.1	140'	75.9	140'	77.5	140'
40	24	67.3	130'	68.1	130'	68.9	130'	69.7	130'	71.3	130'
38	24	60.8	120'	61.6	120'	62.4	120'	63.2	120'	64.8	120'
36	24	54.3	110'	55.1	110'	55.9	110'	56.7	110'	58.3	110'
34	24	47.8	105'	48.6	105'	49.4	105'	50.2	105'	51.8	105'
32	26	34.8	100'	35.5	100'	36.1	100'	36.7	100'	38.1	100'
30	26	31.0	95'	31.7	95'	32.4	95'	33.0	95'	34.4	95'
28	26	28.1	90'	28.8	90'	29.5	90'	30.2	90'	31.6	90'
26	26	24.0	60'	24.6	60'	25.1	60'	25.6	60'	26.6	60'
24	26	20.8	60'	21.3	60'	21.8	60'	22.3	60'	23.3	60'
22	26	17.8	55'	18.3	55'	18.7	55'	19.2	55'	20.6	55'
20	26	15.0	55'	15.4	55'	15.8	55'	16.0	55'	16.8	55'
18	26	12.6	50'	13.0	50'	13.4	50'	13.7	50'	14.3	50'
16	26	10.3	50'	10.7	50'	11.0	50'	11.3	50'	11.9	50'
14	26	8.2	45'	8.5	45'	8.8	45'	9.1	45'	9.7	45'
12	26	6.4	45'	6.7	45'	6.9	45'	7.2	45'	7.6	45'
10	26	5.0	40'	5.3	40'	5.6	40'	5.7	40'	6.4	40'
9	26	4.9	40'	5.2	40'	5.4	40'	5.6	40'	6.1	40'
8	26	4.5	35'	4.8	35'	5.	35'	5.5	35'	5.9	35'
7	26	3.9	35'	4.1	35'	4.2	35'	4.4	35'	4.8	35'
6	26	3.2	30'	3.4	30'	3.5	30'	3.7	30'	4.0	30'
5	26	2.7	30'	2.8	30'	2.9	30'	3.1	30'	3.3	30'
4	26	2.1	30'	2.2	30'	2.3	30'	2.4	30'	2.7	30'



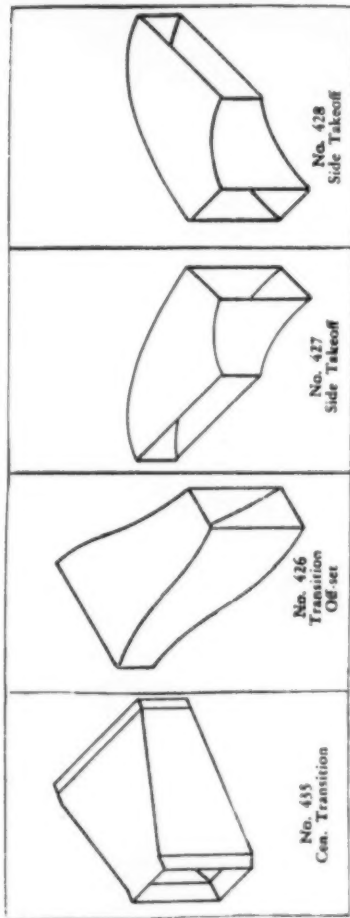
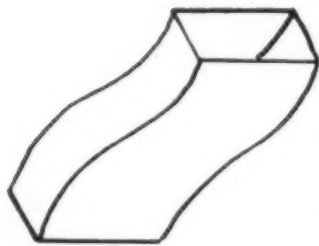
WEIGHT AND TIME FOR BROADWAY 45° ANGLES

Duct	7"		8"		9"		10"		12"	
	Weight	Time	Weight	Time	Weight	Time	Weight	Time	Weight	Time
44	40.0	90'	40.5	90'	40.9	90'	41.3	90'	43.2	90'
42	36.8	85'	37.2	85'	37.6	85'	38.0	85'	38.8	85'
40	33.7	80'	34.1	80'	34.5	80'	34.9	80'	35.7	80'
38	30.4	75'	30.8	75'	31.2	75'	31.6	75'	32.4	75'
36	27.2	70'	27.6	70'	28.0	70'	28.4	70'	29.2	70'
34	23.9	65'	24.3	65'	24.7	65'	25.1	65'	25.9	65'
32	17.4	60'	17.8	60'	18.1	60'	18.4	60'	19.1	60'
30	15.5	55'	15.9	55'	16.2	55'	16.5	55'	17.2	55'
28	14.1	55'	14.4	55'	14.8	55'	15.1	55'	15.8	55'
26	12.0	50'	12.3	50'	12.6	50'	12.8	50'	13.3	50'
24	10.4	50'	10.7	50'	10.9	50'	11.2	50'	11.7	50'
22	8.9	45'	9.2	45'	9.4	45'	9.6	45'	10.0	45'
20	7.5	45'	7.7	45'	7.9	45'	8.0	45'	8.4	45'
18	6.3	45'	6.5	45'	6.7	45'	6.9	45'	7.2	45'
16	5.2	40'	5.4	40'	5.5	40'	5.7	40'	6.0	40'
14	4.1	40'	4.3	40'	4.4	40'	4.6	40'	4.9	40'
12	3.2	40'	3.4	40'	3.5	40'	3.6	40'	3.9	40'
10	2.5	35'	2.7	35'	2.8	35'	3.0	35'	3.2	35'
9	2.4	35'	2.6	35'	2.7	35'	2.8	35'	3.1	35'
8	2.3	35'	2.4	35'	2.5	35'	2.6	35'	2.8	35'
7	2.0	30'	2.1	30'	2.1	30'	2.2	30'	2.4	30'
6	1.6	30'	1.7	30'	1.8	30'	1.9	30'	2.0	30'
5	1.4	30'	1.4	30'	1.5	30'	1.6	30'	1.7	30'



WEIGHT AND TIME FOR VERTICAL ELBOWS

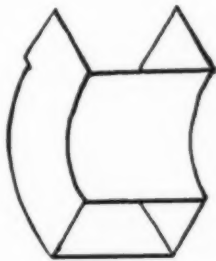
Duct	7"		8"		9"		10"		12"	
	Weight	Time	Weight	Time	Weight	Time	Weight	Time	Weight	Time
44	14.0	90'	15.1	90'	16.2	90'	17.2	90'	19.4	90'
42	13.5	90'	14.6	90'	15.7	90'	16.7	90'	18.8	90'
40	13.0	90'	14.1	90'	15.1	90'	16.1	90'	18.2	90'
38	12.5	80'	13.5	80'	14.6	80'	15.5	80'	17.5	80'
36	12.0	75'	13.0	75'	14.0	75'	14.9	75'	16.9	75'
34	11.5	70'	12.5	70'	13.5	70'	14.3	70'	16.3	70'
32	8.6	70'	9.2	70'	9.9	70'	10.7	70'	12.2	70'
30	8.2	70'	8.8	70'	9.5	70'	10.3	70'	11.7	70'
28	7.8	60'	8.4	60'	9.1	60'	9.8	60'	11.2	60'
26	7.4	50'	8.0	50'	8.6	50'	9.4	50'	10.8	50'
24	7.1	45'	7.6	45'	8.2	45'	8.9	45'	10.3	45'
22	6.7	40'	7.2	40'	7.8	40'	8.5	40'	9.8	40'
20	6.3	40'	6.8	40'	7.4	40'	8.0	40'	9.3	40'
18	5.9	35'	6.4	35'	6.9	35'	7.6	35'	8.8	35'
16	5.5	35'	6.0	35'	6.5	35'	7.1	35'	8.3	35'
14	5.1	30'	5.5	30'	6.0	30'	6.7	30'	7.8	30'
12	4.7	25'	5.1	25'	5.6	25'	6.2	25'	7.3	25'
10	4.3	25'	4.7	25'	5.2	25'	5.8	25'	6.8	25'
9	3.9	25'	4.3	25'	4.8	25'	5.3	25'	6.4	25'
8	3.5	25'	3.9	25'	4.3	25'	4.9	25'	5.9	25'
7	3.2	25'	3.5	25'	3.9	25'	4.4	25'	5.4	25'
6	2.8	25'	3.1	25'	3.5	25'	4.0	25'	4.9	25'
5	2.4	20'	2.7	20'	3.0	20'	3.5	20'	4.4	20'
4	2.0	20'	2.3	20'	2.6	20'	3.1	20'	3.9	20'



WEIGHT AND TIME FOR VERTICAL OFFSETS

Width	Gauge	7°		8°		9°		10°		12°	
		Weight	Time	Weight	Time	Weight	Time	Weight	Time	Weight	Time
44	24	19.9	110'	20.6	110'	21.3	110'	22.1	110'	23.7	110'
42	24	19.3	100'	20.0	100'	20.6	100'	21.4	100'	23.0	100'
40	24	18.6	95'	19.3	95'	20.0	95'	20.7	95'	22.3	95'
38	24	17.9	90'	18.6	90'	19.3	90'	20.0	90'	21.5	90'
36	24	17.2	90'	17.9	90'	18.6	90'	19.3	90'	20.8	90'
34	24	16.6	85'	17.1	85'	17.9	85'	18.6	85'	20.0	85'
32	26	12.3	80'	12.8	80'	13.3	80'	13.9	80'	14.9	80'
30	26	11.8	80'	12.3	80'	12.8	80'	13.3	80'	14.4	80'
28	26	11.3	75'	11.8	75'	12.3	75'	12.8	75'	13.8	75'
26	26	10.8	75'	11.3	75'	11.7	75'	12.2	75'	13.2	75'
24	26	10.3	70'	10.7	70'	11.2	70'	11.7	70'	12.6	70'
22	26	9.4	65'	10.2	65'	10.7	65'	11.1	65'	12.1	65'
20	26	9.2	65'	9.7	65'	10.1	65'	10.6	65'	11.5	65'
18	26	8.7	60'	9.1	60'	9.6	60'	10.0	60'	10.9	60'
16	26	8.2	60'	8.6	60'	9.0	60'	9.5	60'	10.3	60'
14	26	7.6	55'	8.1	55'	8.5	55'	8.9	55'	9.8	55'
12	26	7.1	50'	7.5	50'	8.0	50'	8.4	50'	9.2	50'
10	26	6.6	50'	7.0	50'	7.4	50'	7.8	50'	8.6	50'
9	26	6.4	45'	6.8	45'	7.2	45'	7.5	45'	8.4	45'
8	26	6.1	45'	6.5	45'	6.9	45'	7.2	45'	8.1	45'
7	26	5.9	40'	6.2	40'	6.6	40'	7.0	40'	7.8	40'
6	26	5.6	35'	6.0	35'	6.4	35'	6.7	35'	7.5	35'
5	26	5.3	35'	5.7	35'	6.1	35'	6.4	35'	7.2	35'
4	26	5.1	30'	5.4	30'	5.8	30'	6.2	30'	6.9	30'

Duct	Stack	Cut A		Cut B		Cut C		Cut D	
		Weight	Time	Weight	Time	Weight	Time	Weight	Time
4x7	10x3 1/2	4	45'	3	45'	3	45'	3	45'
5x7	12x3 1/2								
6x7	12x3 1/2								
7x7	14x3 1/2								
8x7	12x5								
9x7	14x5								
4x8	10x3 1/2	4	45'	3	45'	3	45'	3	45'
5x8	12x3 1/2								
6x8	14x3 1/2								
7x8	12x5								
8x8	14x5								
4x9	10x3 1/2	4	45'	3	45'	3	45'	3	45'
5x9	12x3 1/2								
6x9	14x3 1/2								
6x9	12x5								
7x9	14x5								
4x10	12x3 1/2	4	45'	3	45'	3	45'	3	45'
5x10	14x3 1/2								
6x10	12x5								
7x10	14x5								
3x12	12x3 1/2	4	45'	3	45'	3	45'	3	45'
4x12	12x3 1/2								
4x12	14x3 1/2								
5x12	12x5								
6x12	14x5								



SIDE TAKE OFF

Duct		7"		8"		9"		10"		12"	
Width of Branch	Reduce Main Trunk	Weight	Time	Weight	Time	Weight	Time	Weight	Time	Weight	Time
16"	12"	10.3	50'	10.7	50'						
14"	10"	8.2	45'	8.5	45'	8.8	45'				
12"	9"					6.9	45'				
12"	8"	6.4	45'	6.7	45'			7.2	45'		
12"	7"							7.2	45'		
10"	7"	5.0	40'	5.3	40'	5.6	40'				
10"	6"							5.9	40'	6.4	40'
9"	6"	4.9	40'	5.2	40'	5.4	40'				
9"	5"							5.6	40'	6.1	40'
8"	5"	4.5	35'	4.8	35'	5.1	35'				
8"	4"							5.5	35'	5.9	35'
7"	4"	3.9	35'	4.1	35'	4.2	35'	4.4	35'	4.8	35'
6"	4"	3.2	30'	3.4	30'						
6"	3"							3.7	30'	4.0	30'
5"	3"	2.7	30'	2.8	30'	2.9	30'				
5"	2"							3.1	30'	3.3	30'
4"	2"	2.1	30'	2.2	30'	2.3	30'	2.4	30'		



VERTICLE 45° ANGLE

Duct		7"		8"		9"		10"		12"	
Width	Gauge	Weight	Time	Weight	Time	Weight	Time	Weight	Time	Weight	Time
44	24	7.0	90'	7.6	90'	8.1	90'	8.6	90'	9.7	90'
42	24	6.8	85'	7.3	85'	7.9	85'	8.4	85'	9.4	85'
40	24	6.6	80'	7.1	80'	7.6	80'	8.1	80'	9.1	80'
38	24	6.3	75'	6.8	75'	7.3	75'	7.8	75'	8.8	75'
36	24	6.0	70'	6.5	70'	7.0	70'	7.5	70'	8.5	70'
34	24	5.8	65'	6.3	65'	6.8	65'	7.2	65'	8.2	65'
32	25	4.3	60'	4.6	60'	5.0	60'	5.4	60'	6.1	60'
30	26	4.1	55'	4.4	55'	4.8	55'	5.2	55'	5.9	55'
28	26	3.9	55'	4.2	55'	4.6	55'	4.9	55'	5.6	55'
26	26	3.7	50'	4.0	50'	4.3	50'	4.7	50'	5.4	50'
24	26	3.6	50'	3.8	50'	4.1	50'	4.5	50'	5.2	50'
22	26	3.4	45'	3.6	45'	3.9	45'	4.3	45'	4.9	45'
20	26	3.2	45'	3.4	45'	3.7	45'	4.0	45'	4.7	45'
18	26	3.0	45'	3.2	45'	3.5	45'	3.8	45'	4.4	45'
16	26	2.8	40'	3.0	40'	3.3	40'	3.6	40'	4.2	40'
14	26	2.6	40'	2.8	40'	3.0	40'	3.4	40'	3.9	40'
12	26	2.4	40'	2.6	40'	2.8	40'	3.1	40'	3.7	40'
10	26	2.2	35'	2.4	35'	2.6	35'	2.9	35'	3.4	35'
9	26	2.0	35'	2.2	35'	2.4	35'	2.7	35'	3.2	35'
8	26	1.8	35'	2.0	35'	2.2	35'	2.5	35'	3.0	35'
7	26	1.6	30'	1.8	30'	2.0	30'	2.2	30'	2.7	30'
6	26	1.4	30'	1.6	30'	1.8	30'	2.0	30'	2.5	30'
5	26	1.2	30'	1.4	30'	1.5	30'	1.8	30'	2.2	30'
4	26	1.0	30'	1.2	30'	1.3	30'	1.6	30'	2.0	30'



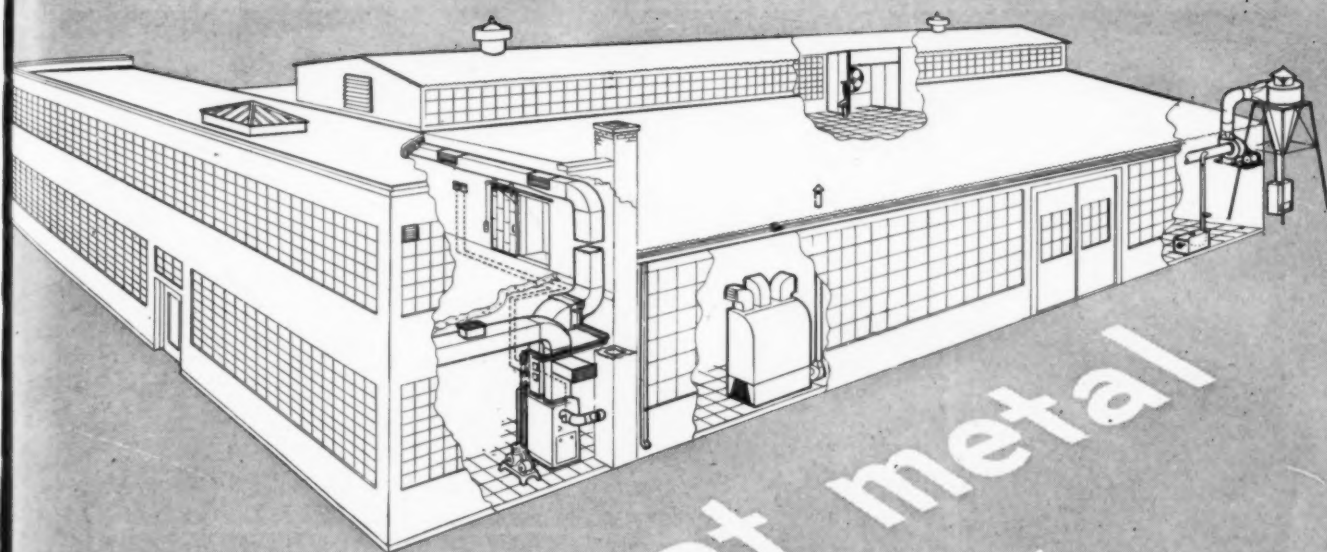
## Heating and Air Conditioning Research Staff University of Illinois

**T**HIS is the staff in charge of teaching and research work in heating, air conditioning, and refrigeration in the mechanical engineering department at the University of Illinois.

Major research projects in the department are: 1—warm air furnace heating, sponsored by National Warm Air Heating and Air Conditioning Association; 2—steam and hot water heating, sponsored by Institute of Boiler and Radiator Manufacturers; 3—physiological studies, carried on at the University of Illinois College of Medicine in Chicago, sponsored by the medical college and the American Society of Heating and Ventilating Engineers; 4—floor slab studies, sponsored by U. S. Department of Commerce and the Small Homes Council at the University; 5—air distribution for year around air conditioning, sponsored by American Gas Association; 6—Illinois smokeless furnace and stove, sponsored by Engineering Experiment station of the university.

Full-time staff members and their projects are: standing (left to right)—N. A. Buckley, special re-

search assistant, project 1; J. R. Carroll, instructor, teaching heating and ventilating classes; W. S. Harris, associate professor, in charge of project 3; S. F. Gilman, instructor, in charge of project 5; R. W. Roose, special research assistant, in charge of project 1; J. R. Fellows, professor, graduate teaching, in charge of project 6; R. L. Porter, research associate, on project 2; M. K. Fahnestock, research professor, assistant director of Engineering Experiment station, consultant for projects 2 and 3; R. J. Martin, assistant professor; graduate teaching, refrigeration courses, consultant for project 5; R. H. Weigel, special research assistant, on project 2; front (left to right)—C. E. Griffin, graduate assistant, on project 2; S. Konzo, professor, graduate teaching, consultant for projects 1, 4, and 5; M. E. Childs, special research assistant, on project 1; H. D. Bareither, instructor, teaching, in charge of project 4. Not in picture—A. C. Willard, president emeritus; A. P. Kratz, professor emeritus; W. H. Severns, professor, on leave.

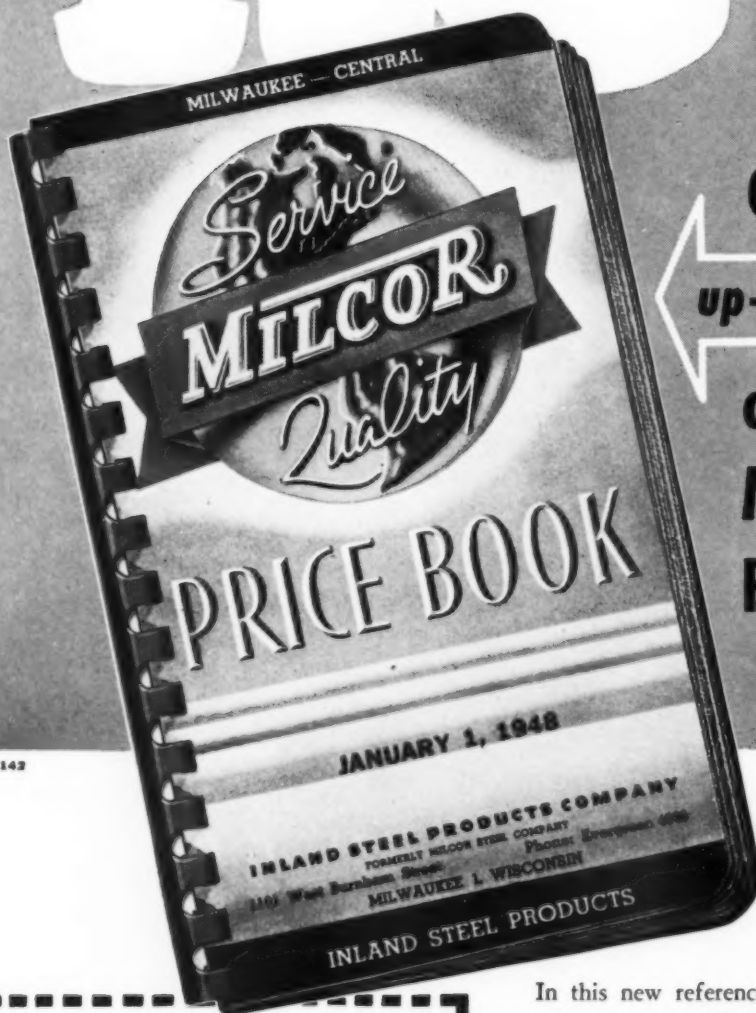


# sheet metal *Section*

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## The Spotwelder

### *Industry's Sewing Machine*

William P. Brotherton  
Ryan Aeronautical Co.  
San Diego, Calif.

The importance of spotwelding in industrial production has grown tremendously since the beginning of the war. During wartime its speed and efficiency were vital to rapid production of armament materiel and spotwelding now can be just as important in cutting production time and in turn, costs. This article, in two parts, is aimed at providing sound, basic information on the value of spotwelding to industrial production.

**S**POTWELDING is a fast, economical and flexible means of fabrication which adds no weight to a structure. It is a relatively new method for joining materials, having been employed in the past for holding parts together temporarily prior to fusion welding or riveting. During the past decade it has grown from a fabricating process which was little used to a method widely employed by many industries for primary joining.

As any metallurgist will state, all welding is a process of joining metals by the application of heat. In spotwelding, the heating is accomplished by passing an electric current through the two, or more, metals to be joined. Pressure is applied by the electrodes and the metal flows together. There are several possible explanations for this phenomenon. One suggests that when a deformation is brought about in a hot metal

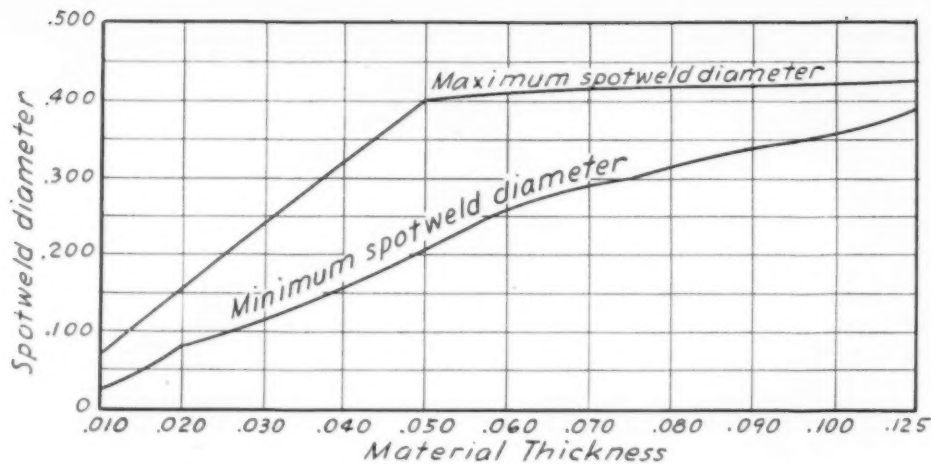


FIG. 1: Showing the minimum and maximum spotweld diameters for different material thicknesses.

the crystals break up then spontaneously grow together again because of the high temperature present and in so doing join with other crystals that formerly belonged to other parts. Another explanation is that the atomic lattices unite with each other, when heated sufficiently and placed under enough pressure.

Spotwelding differs from fusion welding by the fact that the joining is accomplished in metal within the plastic range—that is, below the melting point of the metals being joined. The electric current generates sufficient heat only to render the work plastic enough to be deformed. The bonding action occurs at a localized point, in a spot approximately one quarter inch in diameter. The zone of this bond has the outline of a button lying flat between the sheets, with one half in, and forming part of, the upper sheet, and the other half appearing in the same position in the lower sheet.

Because spotwelding produces a very quick heat in a localized zone, and the metals are therefore held under temperature a short time, there is little chance for structural or chemical change to occur. In addition, no carbon is present during the process to be picked up by the metals being joined.

Recently, spotwelding has been used in all types of sheet metal structures which are subjected to static and thermal stresses in service. The method is equally successful with high temperature-resistant stainless steels and non-ferrous alloys such as aluminum, duralumin and alclad. The main difference lies in the fact that aluminum alloys are low resistance metals having an electric resistance only half again as great as copper. As a result, the electric current used to heat them must be of higher value than that used with steel.

During the war the tremendously accelerated program of aircraft manufacture produced an increased knowledge of spotwelding methods and equipment. This has accounted for the improved shear strength and consistency of modern spotwelding. The process specifications which basically govern manufacturing procedures are those issued by the Army and Navy Procurement Sections. As they were first written, these specifications confined spotwelding to a considerable extent and limited the production applications. This was due to the early equipment then available which was not completely reliable because electrical circuits,

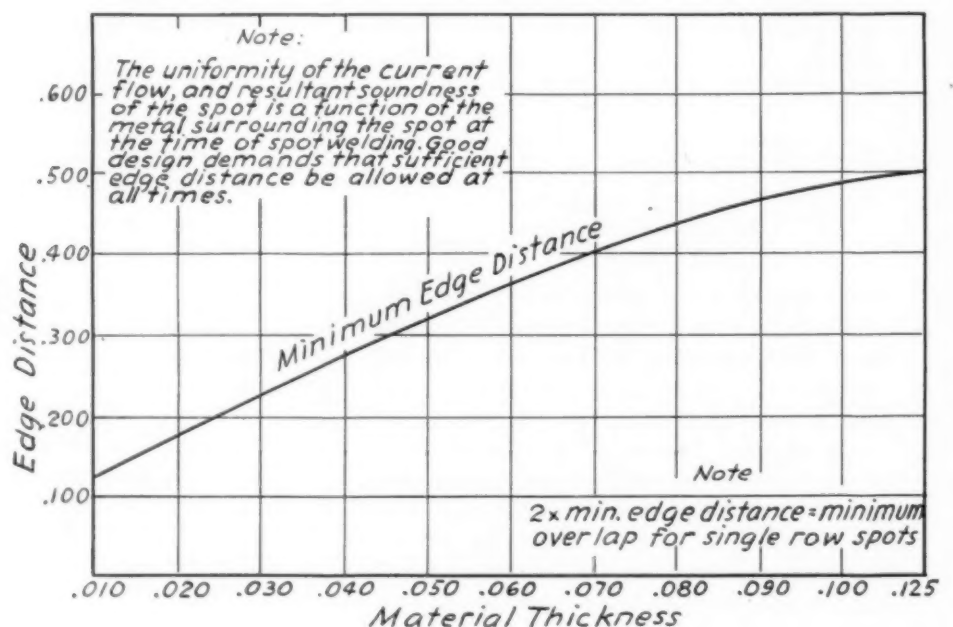


FIG. 2: Graph of the minimum edge distances for different material thicknesses.

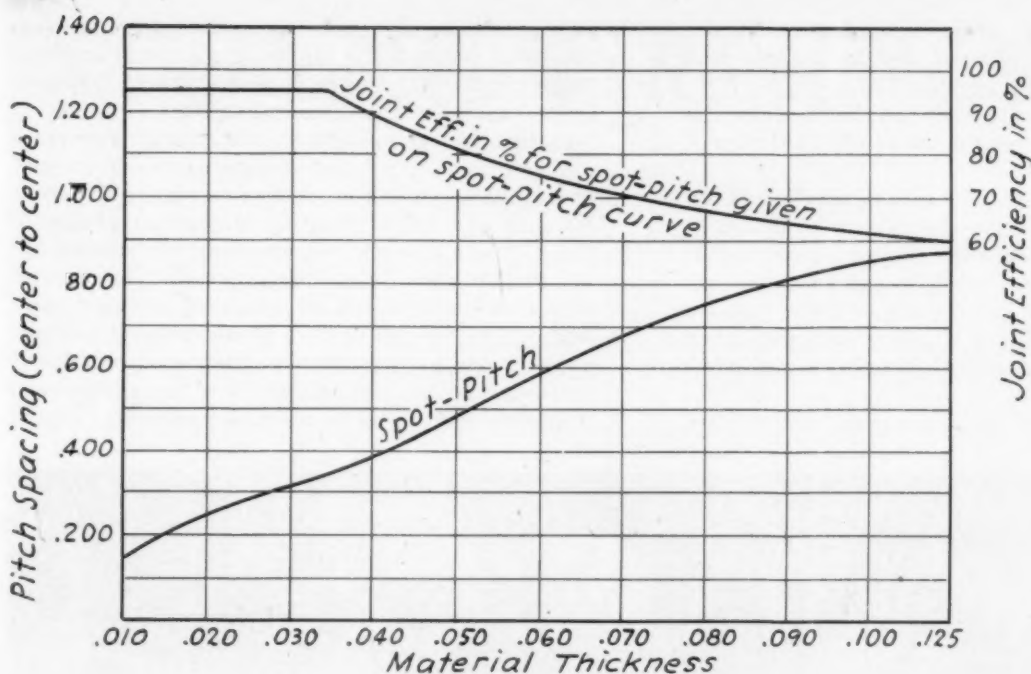


Fig. 3: Spotweld pitch and joint efficiency curves for single-row pattern.

moving parts and relays demanded constant and careful maintenance. It appeared desirable to make the process prove itself before the requirements were relaxed. Today the accumulation of service data proves that spotwelding can be successfully used by a great many industries to excellent advantage.

Spotwelding is particularly desirable in joining sections which are exposed to the flow of fluids such as aircraft, air conditioning, heating and ventilating structures. There is no resultant projection and the surface exposed can be held to a minimum variation of only .004". Indentation may be almost eliminated entirely on one side of the sheet by the use of contoured electrodes. The variety of electrodes which can be used makes the process so flexible that even polished sheet can be spotwelded without seriously affecting its fine finish. Another advantage is that two or

more sheets can be joined together at one time. This is possible because spotwelding depends upon the development of the maximum resistance at the inner facings of the sheets.

#### Design

Since the strength of the spotweld must, of necessity, be a function of the shear strength of the bonded materials, it follows that the design of the parts to be welded can make or break the resultant assembly, in so far as satisfactory service operation is concerned. While it is difficult to list any given set of conditions as criteria for good design, the following suggestions developed at the Ryan Aeronautical Company should produce desirable results:

(1) Loads to be applied to spotwelds should be shear loads because spotwelds, by their very nature, will

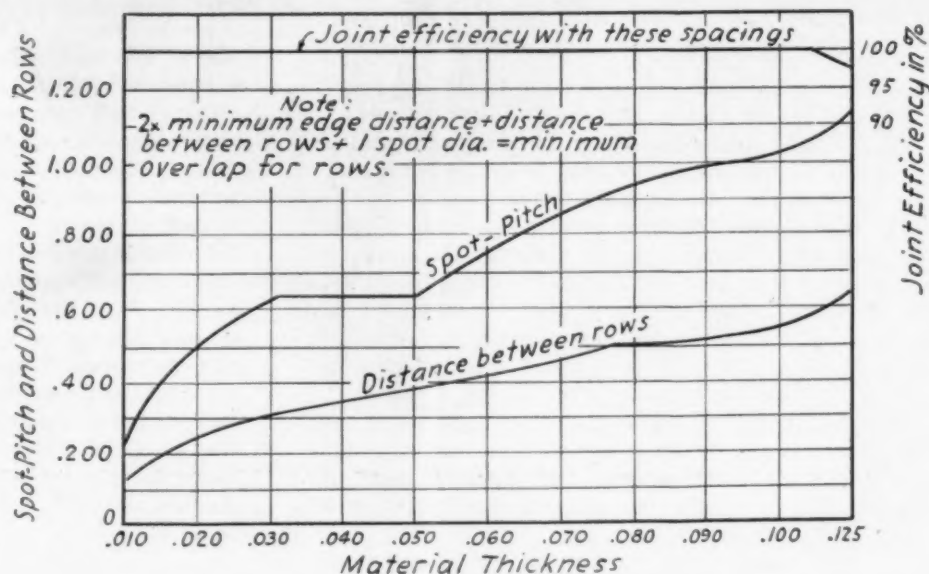


FIG. 4: Spotweld pitch and distance between rows curves for two and three row patterns.

develop focal points of stress concentration at the edges of the weld and the inner faces of the sheets if tension or angle loads are applied.

(2) Tension stresses should never be used because the strengths developed in tension are erratic and cannot be relied upon.

(3) Compression loadings are satisfactory providing the design will not allow the spotweld to be placed in tension as a result of a shifting or a movement of this compression loading. An assembly made from light gauge material demands special care to insure that the stress does not occur in a plane which will cause buckling that may change the spotweld loading from shear to tension.

(4) Ample edge distances must be maintained. This is

with a definite center to center dimension is used. This joint pattern will require a minimum of overlapping of the sheets. The overlap will be determined by the material thicknesses being used which, in turn, through the minimum shear strengths required will determine the other dimensions such as spot weld diameter and edge distance. Center to center spacings and joint efficiency graphs are shown in Fig. 3. These give the recommended dimensions.

(2) *Double row*: This design requires a greater overlap of material, but the efficiency of this type of joint will be from 95 to 100% if the spotweld spacings given in Fig. 4 are used. It is often good practice to utilize the double row pattern even though spotweld strengths may be below average minimum. This is



necessary for two reasons:

- (a) To have a sufficient area, over which the pressure can be applied, surrounding the spotweld.
- (b) To have an adequate amount of *wrought* material so that the stresses can be carried over and around the cast spotweld metal.

The edge distance required will vary depending upon the type and thickness of the material. It must be remembered that as the material thickness increases, the diameter of the spotweld must be increased to meet the minimum required shear loadings. The spotweld diameters for different metal thicknesses and minimum edge distances are given in Fig. 1 and 2.

Spotweld patterns (spot groupings) are of great importance in the design of spotweld structures. They are similar to rivet patterns and spacing used to obtain high joint efficiency and can be divided into three rough classifications:

- (1) *Single row*: In which a single row of spotwelds

due to the fact that this pattern will evenly distribute the loading and result in an assembly giving a longer and more satisfactory service life than a single row of spotwelds of higher average shear values. The double row joint under severe vibration and *fatigue* stress has been found to be more suitable.

- (3) *Double row staggered*: In this pattern the joint efficiency is approximately equal to the double row pattern. The pattern, however, of the double row staggered is not as well stressed. There is considerable difference of opinion as to which joint is the more efficient for general service usage. The material overlap in the double row staggered is less than that in the case of the double row spotwelded joint. The materials which can be spotwelded are almost unlimited although some which develop extreme hardness as a result of heat treatment may present difficulties.

(Please turn to page 162)

# Design of Waste Removal Systems (Part V)

By H. M. Nichols  
Industrial Dep't., Sturtevant Div.,  
Westinghouse Electric Corp., Hyde Park, Mass.

These articles are adapted from a series of lectures that are presented in the Sales Engineering School of B. F. Sturtevant Co. Their application of basic principles is so sound as to be of value to any sheet metal contractor handling this type of work in any good volume.

**I**N MOST industrial plants and process industries, fumes, gases, vapors and excess heat are created by machines, vats, tanks, furnaces, kettles, baths or other equipment. Their presence represents an occupational or industrial hazard, and their removal is either vitally necessary or highly desirable. The fumes may be toxic or corrosive and require positive, complete and constant removal. On the other hand, and according to the process, general and reasonably efficient removal may be all that is needed. Between these extremes lie a wide range of requirements, some relatively simple, other complex and difficult of accomplishment.

## Removal of Fumes Necessary

In the textile industry, dye houses, singeing machines, sanforizers, dye jigs and ranges are the more common fume and vapor removal applications. At various points in the production of synthetic fibres and plastics, the removal of toxic or obnoxious fumes is necessary. Rayon spinning pots and tanks are common applications.

In the metal industry a broad range of processes in the iron, steel, brass and other metal plants require the effective removal of fumes, vapors and excess heat. Among others are melting and heat treating operations, galvanizing, tinning, pickling, cleaning and degreasing—also welding, plating and paint spraying.

**Chemicals:** Fume removal is a common and varied problem in the chemical industry, especially in the case of heavy chemicals, explosives, and chemical laboratories. Mineral and ore reduction processes are other sources of fumes and vapors.

In the hat industry there is vapor removal in felt finishing and shaping. Also in the manufacture of hats from rabbit's fur where in the early process the fur is treated with chemicals to remove the oils so that it will absorb dye. Fume removal in this carroting proc-

ess is most essential, as the chemicals used create a bad health hazard.

Fume and vapor removal is also required in the rubber, roofing, paper, printing, film, engraving and glue industries. Radium painting of luminous dials introduces a definite health hazard.

Fumes, smoke, vapors and excess heat which tend to rise from tanks, kettles, forges, furnaces, melting pots and similar equipment are usually exhausted by the means of canopy hoods. There are plain canopy hoods, double canopy hoods and canopy hoods with side enclosures. The lower the canopy and the more completely the equipment is covered or enclosed, the better the results. The sides of canopy hoods should slope at an angle of approximately 45 degrees with the vertical center line, and should extend laterally over the equipment by four-tenths the distance the hood is above the equipment. Face velocity usually ranges from 150 to 200 ft./min., while the connections to the top of the hoods are usually designed for velocities ranging from 2,000 to 3,000 ft./min. Frequently, with large hoods, it will be found necessary to branch the main duct where it connects to the hoods in order to obtain a uniform distribution of air flow.

## Types of Hoods

A double canopy hood consists of a hood arranged with an inside liner forming a narrow slot about  $\frac{3}{4}$  in. wide around the rim, and with a central opening under the suction pipe having about half the area of the suction pipe connections. With this arrangement the relative high velocity through the slot at the rim of the hood forms an air curtain, which has a tendency to prevent smoke and vapors from curling outward around the periphery of the hood.

Canopy hoods with side enclosures should be used wherever the process will permit, and are particularly necessary where side drafts are present. If the work

interferes with side enclosures, removable sides may be provided or drop curtains of canvas.

Kitchen hoods over cooking ranges are generally located with the back of the hood fastened to a wall. Exhaust openings should be provided with protecting baffles arranged to reduce the entrance of grease into the piping system. Exhaust pipes from kitchen hoods should lead as directly as possible to outdoors, should be well separated from all walls and partitions or insulated with heavy asbestos or similar material. There is always a possibility of intense heat as an accumulation of grease in the pipe may take fire. Quite a common error is to exhaust kitchen hoods into a chimney flue. This seldom works out satisfactorily as the flue resistance is most always much too high for the amount of exhaust air required to properly remove the smoke from the average kitchen range.

#### **Exhaust at Source**

In general, exhaust hoods should be placed as close to the source of the contaminant as possible without interfering with the process, and where it can be done, the process should be enclosed. The hoods should be located and shaped so that the vapors, fumes or smoke are directed by the natural air currents into the mouth of the hoods. Hoods should be so located that the operator is never between the source of contamination and the open face. Cross drafts from open doors, windows, moving machinery, and heated objects deflect the air currents and suitable provision must be made for them by baffling or increased hood velocities. Convection air currents from furnaces, ovens and similar heated objects seldom exceed 75 ft./min. However, direct drafts from open windows, doors, large pulleys, etc., are oftentimes of considerable magnitude.

Paint spray booths are arranged with one open end and exhaust connection at the opposite end. With this arrangement, all of the air entering the booth flows past the operator. Usual air velocity is 150 ft./min. over the face of the booth. Spray booths are arranged with baffles or water curtains at the rear of the booths to reduce the entrance of spray material to the ducts and fans. Sometimes the excess spray is picked up by hanging a series of chains in the back of the booth. When a heavy coating of paint is collected by the chains, they are removed from the booth and placed in an open fire to burn off the collected paint.

Discharge from paint spray booths should preferably be carried above the roof and capped with weather protection. If discharge is carried directly through side wall a deflector cap should be installed to prevent dispersal of paint spray and also to prevent winds creating back pressure against fan discharge. Provision should be made to supply make up air to replace the air exhausted from the spray booths. In cold climates this supply air should be heated to room temperature and delivered into the room at low velocities in order not to create objectionable drafts.

If the booths are located along the outer wall of the building, and direct exhaust can be made through the wall, without an appreciable amount of piping, then propeller type fans can be used successfully. Otherwise, centrifugal housed, radial bladed planing mill or axial-flow fans are required. To prevent sparking, fan blades should be constructed of non-ferrous metal.

Motors should not be placed in duct system unless they are totally enclosed and fire underwriters approve.

#### **Chemical Lab Exhaust**

The removal of poisonous fumes and vapors from chemical laboratories is a problem of considerable importance. Fume hood superstructures are built over the laboratory tables enclosing the tables at the top and on three sides. The front opening of the hoods may be open or fitted with sliding doors. Enclosures or hoods of this type should be fitted with a baffle at the top and back of the hood, arranged with dampered slots so that fumes can be exhausted either at the top, at the back center, or at the bottom, depending on the type of fumes to be exhausted. Fumes heavier than air will have a tendency to accumulate at the bottom of the hood. Laboratory single or double tables usually require hoods of the down draft type, as it is seldom possible to use overhead hoods.

In air-conditioned chemical laboratories, it is customary to furnish a separate outside air supply system directly to the hood, supplying make-up air in an amount equal to 90 per cent of the air exhausted from the hood, resulting in appreciable savings in operating cost and size of the air-conditioning system. Supply intake and exhaust discharge must be so arranged as to avoid recirculating or short-circuiting. Chemical laboratory hoods and fans should be built of materials designed to resist the corrosive action of the fumes. Rubber-lined fans find a useful field in this application. Ducts are often of acid resisting vitreous tile.

#### **Veterans Housing Preference Altered**

THE REGULATIONS by which home builders were granted priority assistance or authorization to construct homes under the Veterans Emergency Housing Program were revoked recently by Housing Expediter Tighe E. Woods, since the statutory authority under which they were issued had expired.

The effect of the revocation was to remove the maximum sale price on all homes built under the regulations. Such ceiling prices had applied since December 5 only on the first or original sale. On that date the regulations were amended to remove the maximum sale price on re-sales.

Also removed was the veterans preference requirements on all housing completed prior to June 30, 1947. Homes authorized under the regulations but completed after June 30, 1947 and before March 1, 1948 are still subject to the Veterans Preference Regulation issued under the Housing and Rent Act of 1947.

Also subject to the Veterans Preference Regulation are all other houses completed after June 30 and prior to March 1, 1948 except for certain homes built for owner-occupancy.

#### **FHA Volume in 1947**

TOTAL APPLICATIONS FOR MORTGAGE INSURANCE filed with the Federal Housing Administration in 1947 were 424,000 new housing units and 162,000 units in existing structures. The major portion of these applications were filed under Title VI which is emergency legislation to provide housing for veterans. Approximately 44 per cent of these units were for rental purposes.



# Aluminum . . .

## *Its Architectural Adaptability*

R. C. Nason  
Long Island, N. Y.

**P**RIOR to the war there seemed to be only scant understanding and use of sheet aluminum for general sheet metal work. But its combined lightness, good appearance and strength, in its heat-treated condition, emphasized during war years, introduced its good qualities to thousands of metal craftsmen. The acquaintance thus procured has carried over into peacetime years.

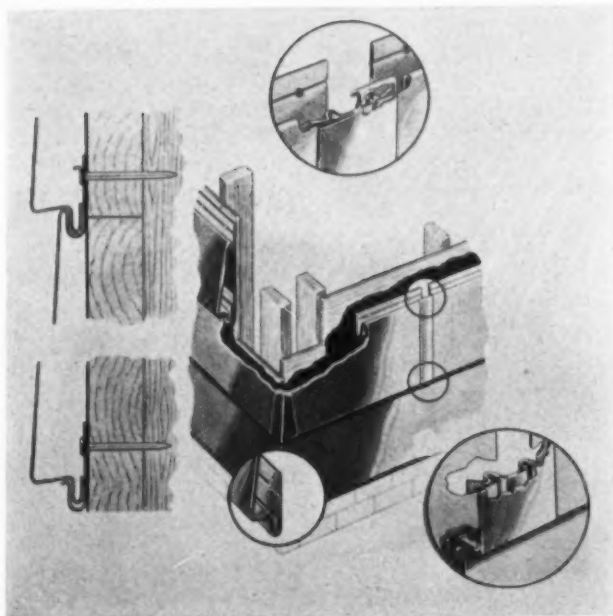
In most localities air conditioning sheet metal contractors are making extensive use of what are called the non-heat-treatable alloys, of which 3S appears the favorite. In some plants  $\frac{1}{2}$ H (one-half hard) is preferred over  $\frac{3}{4}$ H (three-quarters hard).

But how many sheet metal contractors are familiar with the manufacturer-classification "W"? Most metal men know that the "T" condition means tempered, or heat treated, with the tempering done to increase its strength. The "W" is a more recent classification and means, to quote, "the symbol "W" is used to designate alloys that require artificial ageing to develop their maximum properties and indicates that the alloy

has received solution heat treatment but has not been aged at elevated temperatures." Prior to aging, 61S-W, for example, can be bent and formed with considerable ease. It is possible, therefore, where maximum strength is essential, to form the part from 61S-W and then age the finished section to develop the strength properties of 61S-T". Formerly, it is understood, sheeting that was to be subsequently heat treated was shop worked as S-O (annealed condition), then heat treated to become S-T (tempered).

How many know, further, that commercial aluminum, 2S, contains as a maximum, a total of 1 per cent of iron, silicon and copper? This alloy, in wrought condition, has excellent resistance to weather exposure due to its almost total aluminum content.

Alloy 3S, now familiar to sheet metal contractors everywhere, has practically the same resistance to the atmosphere and to salt water as 2S, while alloy 52S has still greater resistance to salt water. Due to the high corrosion resistance of these classes there is little point to painting except for appearance sake and as



Corner assembly of clapboard siding, showing butt-joint and attachment details.

protection against electrolytic action when in contact with dissimilar metals such as steel.

Under the latter service condition it is the steel that receives greater damage. This is also true of copper against steel and some other contacting dissimilar metals. If conditions of exposure are severe, as for example, if aluminum should be used for wharf piling capping wherein the metal would be in almost constant contact with wet wood or other absorbent material, painting of the metal on both sides is advisable.

When usage points to painting of fabricated work this can readily be done on 2S, 3S, 52S and aluminum-coated work following cleaning as the sole preparation. Wiping off the metal with a dilute solution of alcoholic phosphoric acid gives good paint gripping and finish

Laying 8 in. clapboard siding on a house. Corners are covered by "snap-on" caps which are spring fitted to ends of clapboards, individual boards being pinch-locked at the bases with the upper edges nailed.



preparation. Zinc chromate primer is commonly used for the first coats. Aluminum paint also shows good performance in service.

Considering atmospheric exposure further, it may be borne in mind that alloys 52S, 63S and 61S compare favorably with 2S in most atmospheres and as with 2S, 3S and 52S their resistance to corrosion is not significantly affected by the temper.

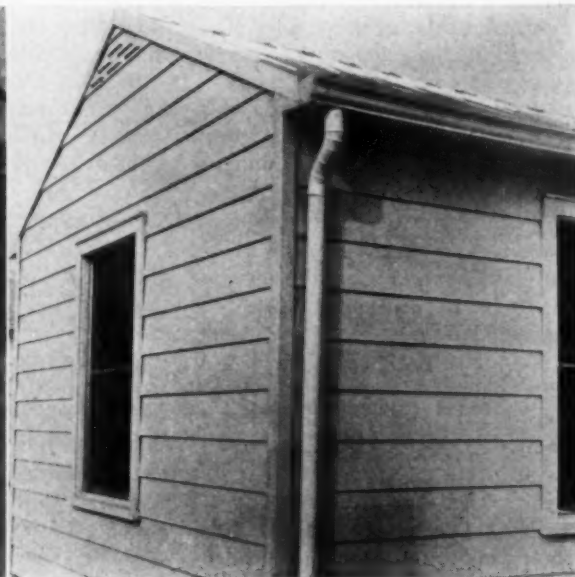
A recent manufacturer's publication gives the preferred aluminum alloys for a long list of products wherein sheeting is either the sole or the major raw material. It is instructive to note in this list that 3S is favored for most common production as current in average sheet metal shops, though 52S is offered as a slightly stronger and more practical alternate classification in some cases. The list recommends 3S for the following: air ducts, awnings, battens, cabinets, laundry chutes, coping, cornices, cresting, flashing, grilles, marquis, ornamental work, roofing, store fronts, spandrels, skylights, storm windows, ventilators and Venetian blinds. Though the foregoing is the general class, it is further understood that its condition will usually be either  $\frac{1}{2}H$  or  $\frac{3}{4}H$ .

When aluminum is to be used architecturally provision for expansion and contraction has to be made much the same as with copper. This suggests, of course, the use of expansion joints. Decimally, the coefficient appears and is, small per degree temperature difference and per unit of length. For example, the coefficient of aluminum is taken as 0.0000122. It has been found, using the stated figure, that an extruded wall coping or cornice of 30 ft. expands  $\frac{9}{16}$  in. under a temperature range of 130 deg. Fahr.

If aluminum is to be fastened to steel and some other dissimilar metals except stainless steel, it is advisable to apply between the opposing surfaces a heavy coat of alkali resistant, bituminous paint, or a coat of zinc chromate primer made with a synthetic resin vehicle. This coating should be allowed to dry before the assembly is made up. The same precaution

(Please turn to page 174)

Another application of 8 in. siding though the corner treatment here consists of a full-length corner post. Gutters, leaders, eave closures and attic ventilation segment are all of aluminum.



# Tools and Their Uses

A series dealing with the various tools that are used in and adapted to sheet metal work. The articles will discuss common uses as well as unusual applications that may not be familiar.

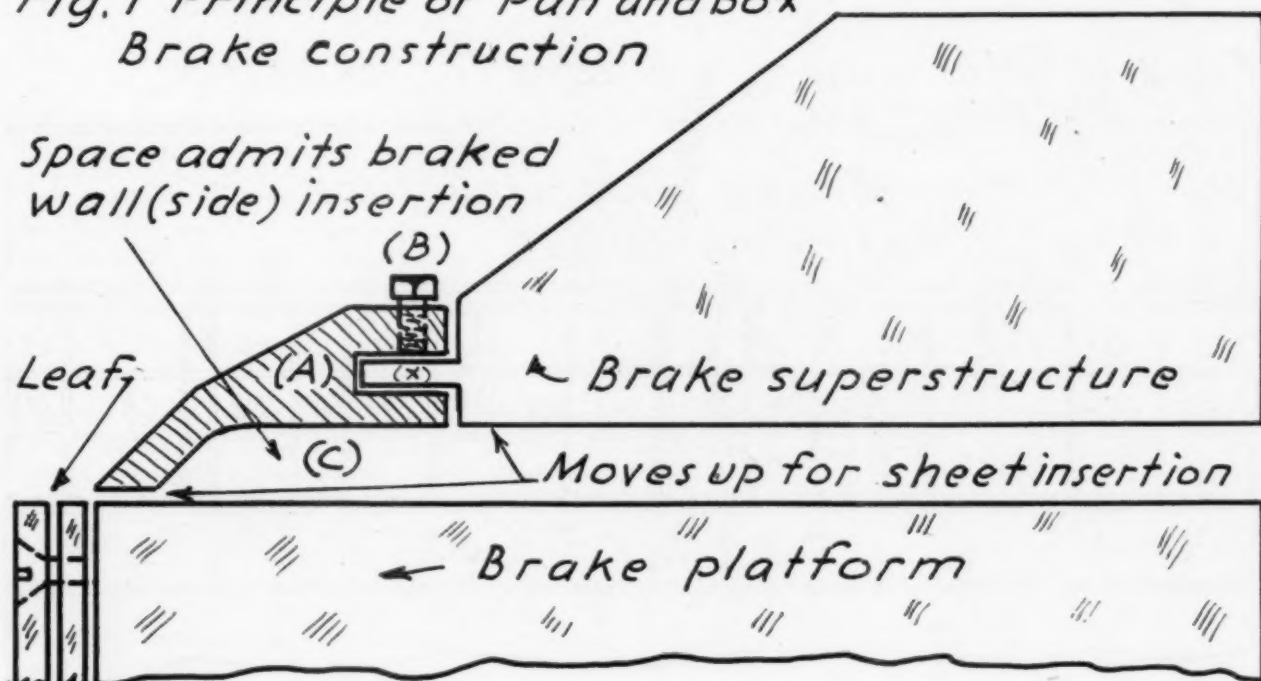
By Ernest E. Zideck  
Sheet Metal Consulting Engineer

## Pan and Box Brakes

THESE brakes differ from common sheet metal brakes by the fact that the edge which bends the sheet metal is made up of a number of interchangeable segments. These vary in width from one to five inches, as shown separately by (A) in Fig. 1, and by the multiplicity of (A's) in Figure 2. The principle works as follows: It is necessary to make integral walls on all four sides of a pan or a box, two opposite walls can be formed in a common brake, but when bending the third and

the fourth wall, the upturns of the first walls prevent the full bending of the metal in the brake. However, if the braking edge is divided as shown in (A), we can use as many pieces as needed aligned side by side, to provide for braking *between* the already formed walls, with the rest of the brake clear. Then the upturns already made move past the braking edge into the superstructure of the brake. In other words, when the distance between the first two (opposite) walls is

Fig. 1 Principle of Pan and Box Brake construction



20 inches, we merely align the segments needed to make the braking edge 20 inches. As seen in Fig. 1, with the pieces extending to form 20 inches of the braking edge, there is nothing at either end to obstruct the metal of the first two upturns moving past them.

### Choosing the Brake

Commonly, the pieces are about 1/16 inch narrower than their full nominal width (5, 4, 3, 2, or 1 inches) so that when set side by side in the brake, the distance does not grow, as it would if the full widths were used. The 1/16 inch gaps between pieces will not ordinarily mar the sheet metal surface. The positioning of the pieces is not difficult, as can be observed by the arrangement in Fig. 1, the tongue (X) receiving the individual pieces and the bolts (B) securing them to the tongue. There are several makes of these brakes in existence, with slight differences in the shape and fastening of the "fingers," as some manufacturers call the segments. In choosing a brake of this type, select one that has the recess (G), shown in Fig. 6, as this provision facilitates the braking of flanges discussed further on. In all other respects this brake operates like the common brake does, whether hand or power driven.

Of distinct advantage in these type brakes (pan and box), is the considerable space (C), as of Fig. 1, permitting of placing upturns in the sheet metal inside of the brake, for processing of the opposite wall. It would be wrong to say that the brake is exclusively one for making pans or boxes. Rather, any kind of sheet metal bending can be done in it, and where there are flanges or borders to be made on three or four sides of the sheet; or upturns are made for wire-inlaying or other reinforcements of the metal; the work can be completed without blemishes, a frequent occurrence when working the third and the fourth sides in another brake. True, all of this more or less complicated or multiple-sides braking can be best done in a press brake; but if we use the press brake for this work we must cut the dies to fit between the first and

the second upturns. If we have a great variety of sizes of any one pan-and-box-like article to make, the most economical brake to use in this work is the pan and box brake.

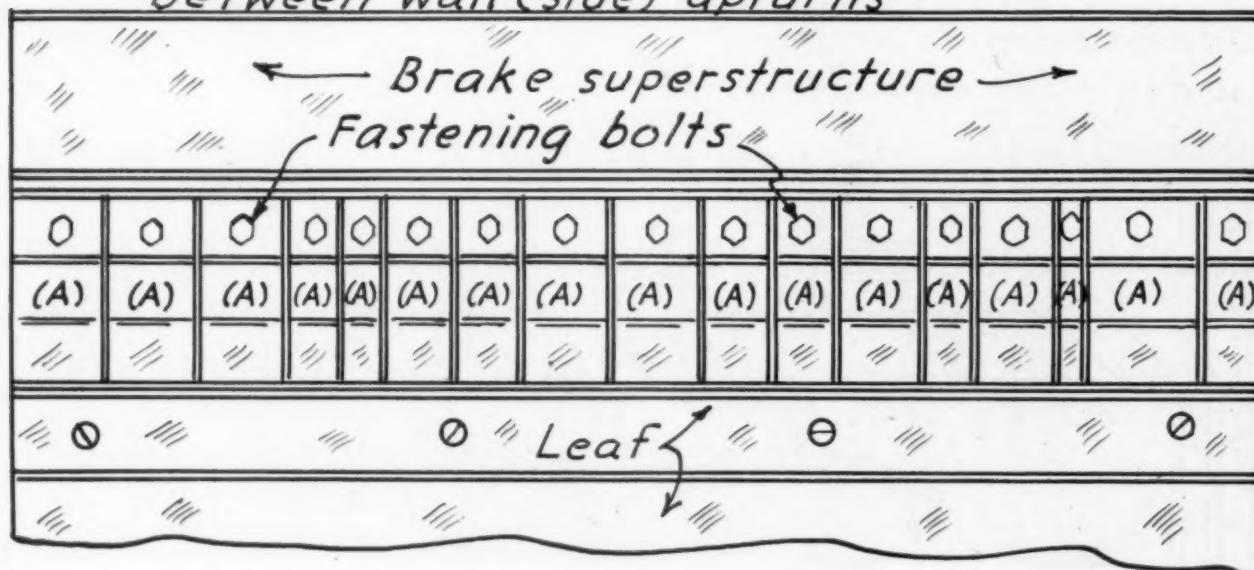
### Principles of Construction

Initially in the construction of this type of brake the need for a facility of braking between the two first formed walls, as demonstrated by the interchangeable parts (A), was the guiding principle. The arrangement was satisfactory for pan-making, with the body of the pan remaining outside the brake, and only the margin of the metal forming the wall to the pan worked (inserted into the brake). Progressively it was seen that by elevating the superstructure of the brake to form a considerable space behind the braking edge (the part A), as of (C), in Fig. 1, the walls formed from the body could be so placed, with only the narrower margin of the metal destined to be bent up for wall, protruding to the outside of the brake. Accordingly, the newer makes of the brakes provided the fingers (A) somewhat similar to the one shown in Fig. 1, with its braking edge descending to the base part of the brake for clamping the inserted metal, but leaving sufficient free space (C) for the bent-up metal to move in and out, without the descending superstructure marring it. This improvement made possible the working of the bends without the long body of the pan extending out from the brake, where it had to be supported and guided, the practice resulting often in "kinks" in the metal of the pan-bottom. Still later the improvement extended to the recess (G), shown in Fig. 6, by which marginal bends in the walls were facilitated, as further shown under Fig. 3, 4, and 5.

Thus, in the progress which the pan and box brake has made, we now distinguish three distinct features or principles, as follow:

1. The primary principle of *dividing the braking edge* into parts, portions or pieces, as shown in Fig. 2. The divisions are such as to permit of their assembly into almost any braking-edge-length, from one

Fig.2 Interchangeable widths for braking between wall (side) upturns



inch on to 2, 3, 4, 5 inches, and their multiplication resulting in any other specified or needed length. As shown above, if the side walls to the pan or box are 20 inches apart, fingers are assembled to provide 20 inches of braking edge, fitting in-between the side walls. No braking edge extends past the 20 inch working width to interfere with the side walls and the ends incline into the interior of the brake structure.

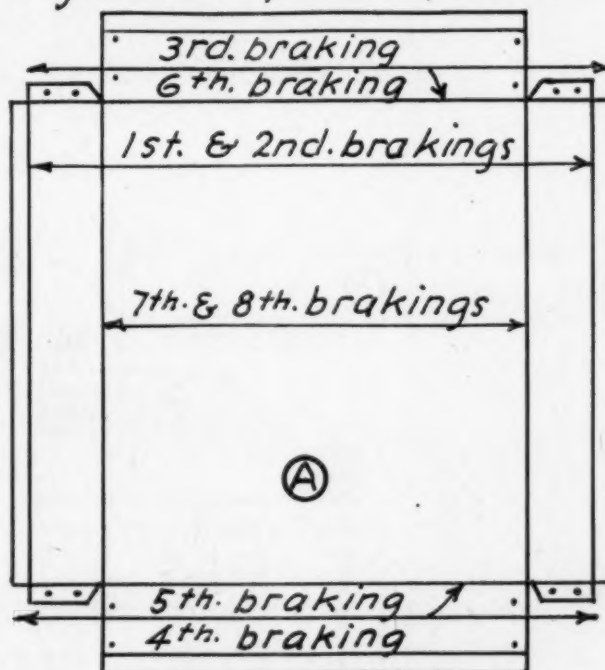
2. Elevation of the part (A) above the base platform of the brake, providing free space (C), shown in Fig. 1. It is anticipated that future constructions of this brake will take into consideration that, the more space (C) is provided, the higher the side walls of a box can be, facilitating work which at present (in many of the older makes of these brakes) cannot be handled. Better and smoother work can be done with the body of the product reposing within the brake, as above described.
3. A recess in the platform as of (G) in Fig. 6, which receives the bent-out flanges of the walls, made for varying purposes, the chief among them being for wire-inlay and other such reinforcing of the metal of the walls. It will be seen in the following text referring to Fig. 3, 4, and 5, why this recess (G) is desirable in the brake.

#### Examples of Operations

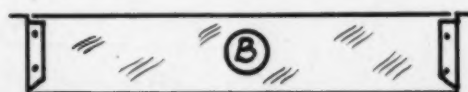
Under Fig. 3 is shown a common sheet metal layout of a pan or a shallow box, with the four integral walls to the product connected in their corners by overlaps, riveted; and with outward bends for wire-inlaying. The letter (B) designates the narrower wall; with overlaps extending from the longer wall (C), riveted to the former. The flanges for the wire are shown bent out, ready to receive the wire, which is inlaid after the corners have been secured together by the rivets through the overlaps. This is a standard construction, interesting to us only in its braking aspects, which resolve into the following:

1. The two longer walls, or the two narrower walls, can be braked in the common brake also. But once we have the two walls formed, the common brake will not allow formation of the other two walls since the upturns come to rest against the superstructure of the brake. It is possible to make a bend of about the degree of the brake-slope, and then complete the bend by hand pressure over a stake or similar sharp tool. This work might pass if only one or two pans or boxes are to be made, but if there is a quantity of the product, the logical tool would be a pan-and-box-brake.
2. Looking at the layout, Fig. 3, we see that we can brake the 1st, the 2nd, the 3rd, the 4th, the 7th and the 8th upturns in the common brake also, leaving only the 5th and the 6th upturns to do by other means. If the pan or box is long enough to protrude to the rear of the pan and box brake, we can complete the 1st to the 8th upturns aforesaid, and then brake the 5th and 6th, without interference. But when the body worked on is too short for the one wall to pass beyond the brake, (and the space (C) as

Fig.3 Example of operations



Completed narrow side



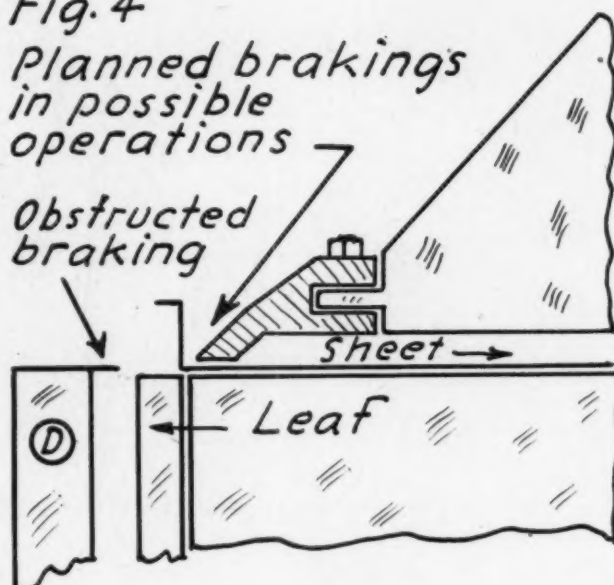
Completed long side



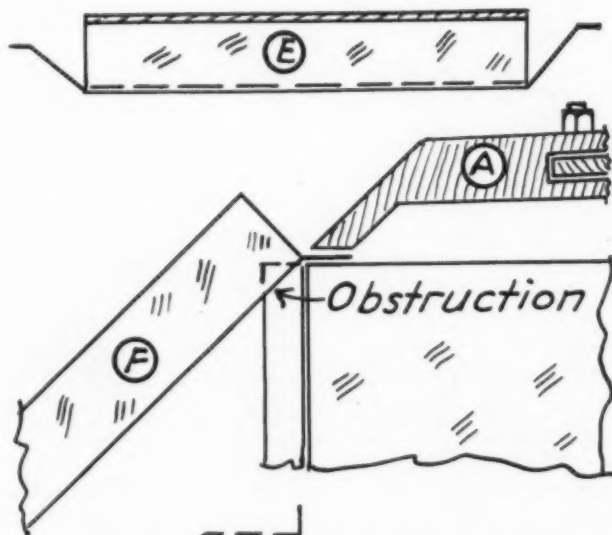
Fig. 4

Planned brakings in possible operations

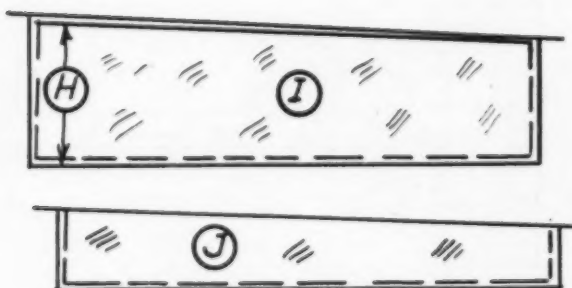
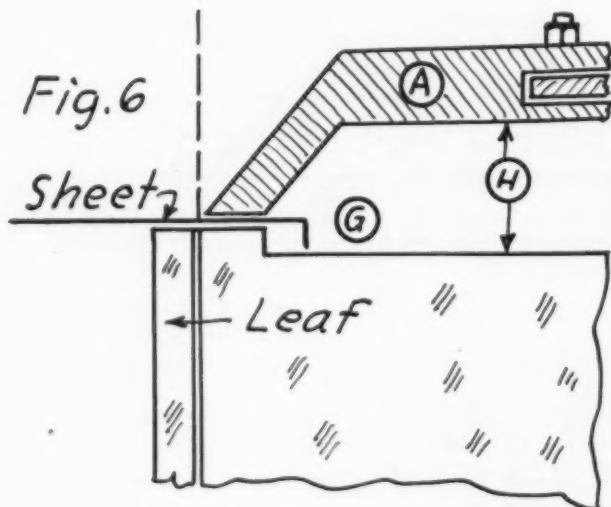
Obstructed braking



*Fig. 5 Pre-Braking of  
Flanges to walls (sides)*



*Fig. 6*



of Fig. 1, is not enough to harbor the upturned wall), we must leave out the 3rd or the 4th upturn and do the 5th or 6th bend first, completing the flange last. This phase is shown in Fig. 4, at (D), the upturned walls obstructing the insertion of the metal under (A), due to the protruding leaf of the brake. In many cases where the space (C) is too small to contain the walls, the obstructions illustrated in Fig. 5 may result, as of (F), the bends resulting in degrees shown at (E).


3. The foregoing obstructions in bending the metal to its specified shape in one operation are completely removed if the brake is of the type shown in Fig. 6, with the space (H) behind the braking finger of (A) sufficient to receive the walls previously upturned. The recess (G) receives the flange upturned in its order as of 1st to 4th operations in Fig. 3. We see in (D) of Fig. 4, that the brake-leaf prevents the forming of the flange *after* the walls are formed; and inasmuch as the procedure indicated under Fig. 5 is nonproductive in the modern sense, we should try to obtain equipment which permits formation of the flange in advance of the wall-forming. The formation (I) under Fig. 6, showing a higher wall (H) which can be inserted into the space (H), of Fig. 6, is indicative of the smooth work that can be done in this kind of a brake. The formature (J) below (I) in the drawings is a further example of unobstructed processing of flanged walls through the brake.

#### **Diverse Other Uses**

The principal advantage of a pan and box brake obviously is the facility (A), as of Fig. 2, the arrangement of the *braking edge* to lengths conditioned by the distance of the first-upturned walls between them. This facility need not be reserved for pan and box making, however. The brake, commonly of 4-foot capacity, can be used for standard braking as well. It is true that badly aligned parts (A) will tend to leave marks in the braked metal, but on the whole, with proper positioning of the parts, the small gaps between them will not react in the sheet metal, leaving the braked edge as smooth as if done in the common brake. In absence of a press brake for flange-forming on such products as cabinet walls, doors and frames, the *adjustable length* braking edge in this type brake can be employed as well for these formatures, regardless of the space (C) dimensions.

Even in the oldest makes of this type brake the space is about two inches in height, so that flanges provided to doors and framework for a variety of cabinets and other utensils can be moved within it without the descending superstructure of the brake marring the upturned metal. With the long sides of the door or the frame flanged and fashioned in the common brake (or in box brake), the body is then inserted through the pan and box brake, with the parts (A) adjusted to the length of the narrower sides of the product, the flanging-fashioning of these sides in the

*(Please turn to page 176)*



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# ASSOCIATION ACTIVITIES



## Indoor Comfort Conferences

**I**NDOOR Comfort Conferences have already been held in Louisville, Nashville, Knoxville, Birmingham, Atlanta, and Charlotte. The following are scheduled for later dates:

Philadelphia—Feb. 18, 19, 20—J. E. Phillips, Stelwagon Mfg. Co., 19th St. & Washington Ave., Philadelphia 46, Pa.  
 Boston—Feb. 25, 26, 27—Thomas F. Donahue, Jr., Herriek Company and R. Estabrook's Sons Div., 352 "C" Street, So. Boston, Mass.  
 Utica—Mar. 3, 4, 5—I. C. Barber, International Heater Co., Utica, N. Y.  
 Buffalo—Mar. 10, 11, 12—L. J. Wieman, Secretary, Buffalo Warm Air Heating Assn., 390 Spring St., Buffalo, N. Y.  
 Akron—Mar. 17, 18, 19—A. Bormet c/o Builders Exchange, 640 N. Main St., Akron, Ohio  
 Pittsburgh—Mar. 22, 23, 24—Louis F. Demmler, Demmler Brothers Co., 100 Ross St., Pittsburgh 19, Pa.  
 Indianapolis—Mar. 29, 30, 31—Homer Selch, 944 Hosbrook St., Indianapolis, Ind.  
 Chicago—Apr. 7, 8, 9—George Kalvog, 1421 N. Keeler Ave., Chicago 51

According to present plans Indoor Comfort Conferences will also be held in the following cities in 1948, with exact dates to be published later:

Green Bay, Minneapolis, Wichita, Denver, Salt Lake City, San Francisco, Portland, Seattle, Spokane, Boise

The Conferences are commended by students who have attended. The 1948 Conferences are of three-day duration instead of two as in 1947. More instruction is being given and the net result will be a substantial improvement in the design, installation and operation of warm air heating systems.—George Boeddener, *Managing Director*.

## Ohio

**T**HE Ohio Sheet Metal & Roofing Contractors Association will hold their annual convention in Cincinnati on March 22, 23, and 24 of this year in Cincinnati, Ohio.

An organizational meeting of the convention committee took place at the Netherlands Plaza hotel on the evening of January 5th and Phil Young, president

of the Ohio association, was elected general chairman of the convention to work along with Rufus Heinbuch, local president, to make the 1948 convention an outstanding one.

This year's meeting will be held at the Netherlands Plaza Hotel and an extensive program of both social and educational events has been planned for the 300 members who are expected to attend.

The following committees were appointed:

FINANCE: Jacob Jacobs, Chairman; Earl McNamee.  
 RECEPTION: Chas. Grote, Chairman; Al. Kramer, R. Heinbuch, F. Ruehrwein.  
 PROGRAM: H. Fahnle, Chairman; R. J. Blum, Jr., F. M. Cole, F. Ruehrwein.  
 BANQUET: Phil Young, Chairman; Jacob Jacobs.  
 ENTERTAINMENT: R. Heinbuch, Chairman; F. Ort, F. Ruehrwein, E. McNamee.  
 PUBLICITY: Phil Wise, Chairman; L. Gillespie, W. MacDonald, J. Kuhl, Jacob Jacobs.

## St. Paul

**N**EW officers of the Roofing and Sheet Metal Contractor's Association of St. Paul, duly elected for the year 1948 are:

President.....H. Hertzner  
 Vice President.....H. T. Helle  
 Secretary.....G. E. Olinger  
 Treasurer.....J. L. Stuhlman

*Board of Directors:*  
 C. E. Parriott  
 R. Walsh  
 H. R. Bostrom  
 F. Lundberg  
 W. Meyer  
 R. Magne  
 N. Bartl  
 E. Nelson

—G. E. Olinger, *Secretary*.

## Illinois Changes Convention Dates

**T**HE officers and directors of the Sheet Metal Contractors Association of Illinois held their regular meeting on January 10, 1948, in Peoria.

The date of the annual convention has now been changed to April 12, 13 and 14, 1948, at the Jefferson Hotel, Peoria, Illinois. The former dates conflicted with the Oil Heat Institute being held in Chicago on April 5, 6, 7 and 8, 1948.—W. R. Shaw, *Secretary*.

## Coming Conventions

### 1948

Mar. 4-6—Michigan Sheet Metal, Roofing, Heating and Air Conditioning Contractors' Association, Inc. Annual. Fort Shelby Hotel, Detroit. Jim Neil, Secy.

Mar. 22-24—Ohio Sheet Metal Contractors' Association. Annual. Netherland Plaza, Cincinnati. W. E. Bogen, Secy., 334 E. Livingston Ave., Columbus 15, Ohio.

Apr. 5-7—New York State Sheet Metal, Roofing & Air Conditioning Contractors' Association. 25th Anniversary. Rochester.

Clarence J. Meyer, State Secretary, 567 Genesee Street, Buffalo 4, N. Y.

Apr. 5-8—Oil-Heat Institute of America. Silver Anniversary Convention and Products Exposition. The Coliseum, Chicago. A. E. Hess, Man. Dir., 6 E. 29th St., New York 16.

Apr. 9-10—Roofing & Sheet Metal Contractors' Association of Florida. Annual. George Washington Hotel, Jacksonville. John C. Caldwell, Secy-Treas.

Apr. 12-14—Illinois Sheet Metal Contractors' Association. Annual with Exhibits. Jefferson Hotel, Peoria.



# Minnesota Holds First Convention

**T**HE first annual convention of the Sheet Metal and Roofing Contractors Association of Minnesota was held at the Nicollet Hotel, Minneapolis, January 16 and 17. The convention was called to order by President C. E. Parriott of St. Paul, who welcomed members and guests.

Much of the first morning session was allotted to important business activities of the new association during the past year. Secretary T. F. Burniece, Jr. of Minneapolis, read the minutes of the first year's meetings. Roy Dose of St. Paul, Chairman of the Labor Relations Committee of the Sheet Metal Contractors' National Association proffered the good wishes of the National association in the absence of its president, R. E. Walsh, who was confined to his St. Paul home by illness.

## 1948 OFFICERS

F. W. Legler, Minneapolis.....	President
L. B. Hill, Austin.....	1st Vice President
L. G. Peterson, Duluth.....	2nd Vice President
D. P. Johnson, Willmar.....	3rd Vice President
T. F. Burniece, Jr., Minneapolis.....	4th Vice President
E. E. Woodhouse, Rochester.....	5th Vice President
C. E. Parriott, St. Paul.....	Secretary
H. T. Helle, St. Paul.....	Treasurer
R. J. Kraus, Minneapolis.....	Sgt.-at-Arms
H. Ofenloch, Winona.....	Director
Walker Jamar, Duluth.....	Director
H. W. Quade, Jr., Minneapolis.....	Director

## National Hour

At the afternoon session, J. D. Wilder of Elgin, Illinois, executive secretary of SMCNA introduced the speakers of the National Hour:

E. B. Brown, Jr. of Chicago, Chairman of the Trade Relations Committee, urged that contractors should work toward the protection and enlargement of their field. He advanced the suggestion that contractors should get all the work and equipment possible into heating, sheet metal, and air conditioning specifications. The basic objective of the committee calls for more work for the industry in the future, because the time will come when more work will be needed.

Continuing, Mr. Brown said the Taft-Hartley Act does not provide for settling jurisdictional disputes. There will be no more spot decisions. Every decision will be national and when the industry gets a decision it will cover all contractors. The committee proposes to aid, so far as possible, in getting as much work as possible that belongs to the sheet metal industry awarded by keeping in contact with awarding bodies.

## Warm Air Heating

F. W. Legler of Minneapolis, stated the Warm Air Heating Committee is making a survey of workmen's compensation rates in different areas of the country because the committee has found compensation rates for heating work too high as compared with other more hazardous work. The survey among the members will also include a break-down of the accident experience of contractors who are engaged solely in the installation of warm air heating.



President Parriot adds his greeting to the assembled delegates.

Experiences of heating contractors' being sued for damages caused by accidents many years after completion of a heating system was cited as another activity of the committee. Product liability insurance is being investigated as a means to cover this liability. After the study is completed, the SMCNA will make recommendations to the membership.

Mr. Legler then disclosed other subjects being studied by this active committee: incentive plans, time of furnace operations, production methods study, panel heating with warm air, and others of interest to the warm air heating contractor.

#### Bookkeeping

Rudy Guenther of Chicago, told the Minnesotans about the simplified bookkeeping system available from the National association. This system includes all the sheets, forms, etc. for about one year in the average shop. It is designed especially for sub-contractors. It provides all data and records for reports to taxing bodies and Federal agencies—in one binder.

All instructions come with the system. Provision is made for withholding tax, social security, and state taxes. A tax calendar shows when taxes are due, to whom payable, and percentages; and includes an income tax guide.

The system is suitable for contractors doing a business less than \$250,000 annually.

The cost of this system is \$30, and it is sold on a money-back guarantee, if it does not fulfill requirements.

*(Note: We have received many requests from readers for information about this system. A prospectus and description of the system may be obtained from the executive secretary of SMCNA, 170 Division Street, Elgin, Illinois.—ED.)*

#### Taft-Hartley Act

Leavitt R. Barker of Dorsey, Calman, Barker, Scott and Barker, Minneapolis, said the Taft-Hartley Act affects heating and sheet metal men more than the Wagner Act, because all trades in the construction industry previously had relations with unions. The act abolishes closed shops. Contractors must concern



A banquet close-up.  
"Fritz" Legler's hand is quicker than the camera's eye, that's sure!  
Can anyone identify the silver-throated tenor shown here?

themselves with it, for it will cost money if they are not acquainted with its provisions.

Mr. Barker then stated that under a closed shop agreement, an applicant could not be employed until he had joined a union. Under the union shop, permitted in the Taft-Hartley Act, an applicant has thirty days in which he may join a union. However, before a shop can be qualified as a union shop, an election must be held and a majority of all employees must vote in favor of the union shop. He disclosed a contractor is liable to suit by a competent non-union

*(Please turn to page 144)*

# Association Activities . . .

## Associated—Chicago

THE November 24 meeting of the Associated Air Conditioning and Sheet Metal Contractors was held at the hall of the Northwestern Stove Repair Company at 8814 South Commercial Avenue, Chicago. President H. M. Dally called the meeting to order with all officers present except the vice president.

There was an exchange of opinions about the continued shortage of galvanized sheets. Aluminum sheets are also scarce. There was discussion as to the continued shortage of both mechanics and apprentices and many suggestions to overcome the situation. Secretary A. J. Harris gave a lengthy report of conditions as he saw them on his six weeks' tour of the states and Canada when he visited some 52 shops.

Ben Flock gave an interesting report of the Institute school.

Election of officers resulted as follows:

President.....	H. M. Dally
Vice President.....	Ervin Klawinski
Treasurer.....	Harry Witt
Secretary.....	A. J. Harris
Delegate to Central Committee.....	Fred Hemple
Sgt.-at-Arms.....	Wm. Gierman

The January meeting was held at Phil Smidt & Son, Inc., 1205 Calumet, Whiting, with the wives of members included.

Secretary Harris reported that he is interested in equipping an orphan's home with equipment to start a small sheet metal shop for the older boys and asked donations of both hand tools and bench tools. Several members promised to look over their surplus equipment.

Every member of the association has paid dues to January 1, 1948, as well as dues to the National association.—A. R. Harris, Secretary.

## Canada

THE following officers for 1948 were elected at the seventh annual meeting of the Canadian Institute of Stove and Furnace Manufacturers, held at Quebec City in December:

C. I. Mills, Moncton, N. B., President  
R. Oaten, Toronto, Ont., Vice-President

Members of the Board:  
A. L. Acton, Ottawa, Ont.  
D. S. Fisher, Sackville, N. B.  
H. A. Gauvin, Montmagny, P. Q.  
F. A. Simpson, Guelph, Ont.  
J. P. Thibault, L'Islet Station, P. Q.

The following, who were elected chairmen of the product group shown opposite their names, also become members of the Board:

F. W. Crossley (Oil Product Group)  
E. G. Hohn (Electric Product Group)  
A. Karges (Furnace Product Group)  
A. MacKenzie (Gas Product Group)  
F. W. Spry (Coal and Wood Product Group)

## Carolinas

STANDARD contract forms are being developed by the Carolinas Roofing and Sheet Metal Contractors Association. A committee is developing the form and will submit it to the directors.

The association and associate members are already

planning for the summer convention. Associate members had a good representation at the Charlotte convention and helped make it worthwhile. They have appointed an entertainment committee, with Ham Jones of the N. B. Handy Co., as chairman. Serving with him on this committee are George Brown of the Barrett Company, Tut Johnson of the Gordon Metal Company, B. S. Withington of Lyon, Conklin Company, and Arnold Holmes of the Pittsburgh-Corning Company. The committee is to meet with Charles E. Graham and Floyd Rollins, the president and secretary of their association, at the Barringer Hotel in Charlotte on February 20. At this meeting they expect to work out the entertainment for the Myrtle Beach convention.—J. A. Piper.

## Buffalo

THE Buffalo Warm Air Heating Association held their monthly meeting at Markeen Hotel with dinner and installation party.

New officers were installed by Edward McDonald, as follows:

President.....	Leo J. Olear
1st Vice President.....	Barney Calkins
2nd Vice President.....	Harry Yost
Secretary.....	Boland Lyman
Financial Secretary.....	Martin Turner
Board of Governors	
Harry Schaefer	Norman Pilkey
William Seelbach	Fred Hehr

After the installation a good show was given by high-class night club entertainers.

President Leo J. Olear discussed the program for the coming year and pointed out good problems for the interest of the Association.

President Olear reminded members about the Air Conditioning School being held in the Markeen Hotel by the National Warm Air Heating and Air Conditioning Association (teacher, Guy Voorhees), and sponsored by the Buffalo Warm Air Heating Association on March 10-11-12. He urged each and every heating contractor to get their application in as soon as possible as there is a time limit set.

The attendance at this meeting was 125 members.

Meetings are held the first Wednesday evening of each month at the Markeen Hotel.—Boland Lyman, Secretary.

## Fourth Annual of Canadian Chapter

SEVENTEEN of the twenty-four manufacturer members and seven of the three hundred and eighty associate members were represented at the fourth annual meeting of the Canadian Chapter National Warm Air Heating and Air Conditioning Association, held in Quebec City on December 12, 1947. Special guests were Professor E. A. Allcutt, head of the Department of Mechanical Engineering, University of Toronto, A. D. Kent of the National Research Council, Ottawa, and A. D. Ellwood, editor of the Sanitary Engineer.

## Year's Activities

A comprehensive 19-page report covered membership, schools, French manual, publicity activities, financial report, and summary.

G. O. Colborne, chairman of the Technical Advisory

Committee, presented a well-rounded report on the activities of this committee.

### 1948 Officers

The following were elected to office for the 1948 term:

President.....M. H. Smith  
 Vice President.....J. P. Thibault  
 Directors...F. R. Rand, C. E. Souder, A. Karges,  
                   M. H. Smith, J. P. Thibault  
 Secretary-Treasurer and Managing Director...C. B. Taylor  
 Technical Advisory Committee: A. G. Baxter,  
                   G. O. Colborne, J. F. Mitchell, G. E. Fallister,  
                   A. G. Salmon

### Michigan

**M**ICHIGAN Sheet Metal, Roofing, Heating and Air-Conditioning Contractors' Association, Inc., again has a monthly Bulletin for the interchange of ideas, information and news of the members of the state. The publication date has been tentatively set for the 25th of the month.

Plans are proceeding for the 37th annual convention, scheduled for the Fort Shelby Hotel in Detroit on March 4, 5 and 6. Reservations should be made promptly and addressed to Dave Dobson, sales manager, Fort Shelby Hotel, Detroit. Members are invited to come, renew acquaintances and enjoy themselves, but also armed with some constructive ideas for the betterment of the state association. There will be an Open Forum period.

For the Auxiliary, the regular meetings of the various local association are:

Detroit.....2nd Thursday each month  
 Flint.....2nd Wednesday each month  
 Saginaw Valley.....1st Monday each month  
 Kalamazoo.....2nd Monday each month  
 Grand Rapids.....1st Tuesday each month  
 Muskegon.....3rd Tuesday each month

### Detroit

**T**HE December meeting of the Detroit Warm Air Heating & Air Conditioning Contractors' Inc., was held at the Fort Shelby Hotel.

The meeting was opened by President Marshall Van-Asche and then turned over to Secretary Jay Biddle.

Members were asked to submit a list of apprentices who had been going to school regularly.

The Construction Industrial Council is to carry on the good work and the Association will be represented on the Board.

Only thirty-four of the members have sent in the number of their employees as recently requested and it was stressed that every member should send in the report so that the full total could be used when it comes to bargaining with the various groups.

Members were informed about the Michigan Insurance Unemployment Committee and pamphlets were distributed showing just where the employer stood in regard to this law. A committee is going to meet the officials of the Safety Engineering Department to discuss the probability of licensing oil burner installation contractors and to go into detail regarding the oil burner installation and service code.

Ernie Parsons made a suggestion regarding a membership committee which was taken under advisement.

Refreshments were furnished by Grant Wilson, Inc. who sells various asbestos products.



Top—Richard O. Montrief, vice-president of the Ward Heater Co., Los Angeles, being congratulated upon his succession as president of the Institute of Gas Heating Industries; retiring president C. A. Gabriel (left) head of the Monarch Heating Co.; and Ernest W. Kimmell, managing director of the Institute.

Second—left, Joe Wilson, head of the Committee on Ethics; Fred W. Heisinger, chairman of the short-term educational committee; and Donald S. Kirtley of the Southern California Gas Co., member of the educational committee and instructor for the Institute's class for journeyman heating installers.

Third—Members of the class of journeyman heating installers, who completed an 8-week educational course sponsored by the Institute in cooperation with the Southern California Gas Co., received their diplomas at a meeting held in Beverly Hills on December 11th.

Fourth—Group at the Gas Heating Industries' dinner meeting December 11th. The speakers' table can be seen at the far end of the room.

# Association Activities . . .

## Contractors' National

THE December News Bulletin of the Sheet Metal Contractors' National Association indexed, punched and sized for binding is now 8½ by 11 inches.

At least three representatives of the National will appear at eight state association conventions scheduled for 1948—each representative will deal with one of the major activities of the National Association.

### Trade Relations

The Trade Relations Committee has set up a program intended to stimulate and urge all members to bid on and take contracts including all the types of work and equipment required thereunder which sheet metal contractors are entitled to do under spot and national jurisdictional awards.

### Warm Air Heating Committee

A five-step program has been approved by the Warm Air Heating Committee:

1—On the basis that accident compensation rates are too high in many areas for warm air heating work, the committee will make a survey among all association members to determine each member's rate.

2—A kind of policy called "products liability" covers claims made years after installation and should be bought by every contractor.

3—A special study on incentives or some form of bonus or piece-work plan for extra effort for increased productivity from labor is being made.

4—An apprentice training program for the training of installers and servicemen of automatic fired heating equipment—to install, adjust and service furnaces, burners, stokers, controls, etc.

5—The fuel oil situation is desperate. The committee will ask members the number of burners they service, and then report this tabulation to major oil producers.

### The Sheet Situation

Almost no encouragement can be given to members who are not now established on some supplier's schedule for black and galvanized sheets in light gauges.

For the long pull, probably the testimony of Earl Graham of Federal Trade Commission to the Senate Special Committee, last July, is the most enlightening basic data released. Brought down to one sentence—the "integrated" mills which produce the pig iron, the ingots and also roll are definitely launched on a program of producing every possible *finished product*; on that basis they can not, or will not, supply pig and ingots to the 64 semi-integrated and 82 non-integrated mills which formerly furnished most of the sheets used by fabricators.

### Special Study Reports

The first special report is entitled "Panel Heating—with Warm Air." This will be a 16-page report in which several types of floor and ceiling panels using warm air were tested and studied. The report will

show, in eight drawings, how the panels were constructed; what actually happened at the jobs in cold weather; will put emphasis on incorrect construction which leads to trouble; and will furnish enough data that the reader can use the report in a large measure as a "design procedure."

Similar reports on such subjects as how to use aluminum, firm prices, the five-day week, incentive plans, overhead, and labor efficiency, are planned.

### Bookkeeping System

The National Association's Bookkeeping Committee has recommended a system selling for \$30, including all necessary sheets, etc., to operate the system for about one year in an average shop. This system was designed especially for sub-contractors in the construction industry and was developed by accountants.

### Labor Relations Committee Meeting

The Joint National Labor Relations Committee met on December 14 and 15 in Chicago to discuss 1948 wage agreements. Representing the employers were: Chairman Roy H. Dose, St. Paul; Honorary Chairman Louis L. Narowetz, Chicago; committee members: C. H. Chambers, Baltimore; W. A. Wiedenmann, Kansas City; S. E. Fox, Denver; A. J. Dalton, Detroit; J. H. Murray, Chicago; J. F. Higgins, St. Louis, W. C. Bittner, Saginaw; M. A. Thesmacher, Cleveland; W. E. Schmitt, Rochester. National Association President R. E. Walsh was an observer. Executive Secretary J. D. Wilder acted as secretary of the meeting. O. H. Wendt, Chicago, acted as alternate for committeemen absent.

In view of the seriousness of the situation under the Taft-Hartley law, the Joint National Labor Relations Committee is now preparing—in consultation with attorneys—a resolution to be forwarded to National Labor Relations Board, calling NLRB's attention to the need for an acceptable method for settling jurisdictional disputes and urging NLRB to establish a procedure as quickly as possible.

The committee discussed the problem of making the Standard Form of Union Agreement conform with provisions of the T-H law. A sub-committee of the Joint National Labor Relations Committee was appointed to meet and prepare and adopt amendments to the Standard Form of Union Agreement. This committee consists of one attorney representing labor and one attorney representing employers, plus three contractors representing SMCNA and three men representing SMWIA. Chairman Dose appointed Roy H. Dose, R. E. Walsh and L. L. Narowetz to represent the National association. Labor announced two of its three men—Robert Byron and James Close. The Joint Committee agreed that James Close (newly appointed National Secretary of SMWIA, with office in Washington) should be the secretary of the sub-committee.

The chairman will be elected by the sub-committee.

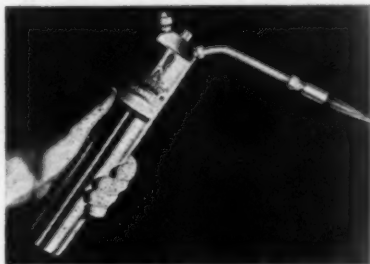
Nine items were listed as necessary topics for discussion between organized labor and employers—jurisdictional protection, definition of a bona-fide shop, first call on available union labor, overtime pay rate, premium pay for night work, apprentices, trainee, school for labor relations committee, ninety-day notice. Some of these have already been settled.—J. D. Wilder, Executive Secretary.

# EQUIPMENT DEVELOPMENTS

## 25—Crown Torch

The Crown Torch for soldering, brazing and heating operations, is made of 16-gauge seamless brass tubing, scaled by furnace brazing, has a pressure capacity of over 2200 psi (operating pressure with Butane and Propane gases is 90 to 150 psi), is 12 inches long 2¼ inches in diameter, and weighs 2½ pounds when full.

Features include fingertip control of flame size and temperature, pat-



ented "all-in-one" tip which eliminates need for tip changes, 100 percent Btu efficiency, and easy filling operation.

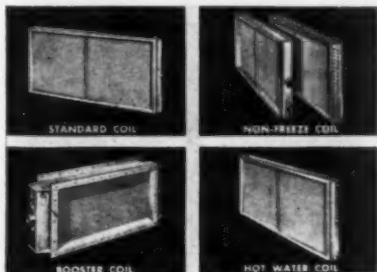
The Crown Torch can be filled from any standard Butane or Propane tank.—*Sully Engineering Ltd., 7416 Melrose Ave., Los Angeles.*

## 26—Coils

A range of types, models and sizes plus major design improvements characterizes a line of heating coils, available in standard, non-freeze, booster and hot water types, each in a wide variety of tube and fin combinations and casing sizes.

Absence of baffles or shielded headers within casings assure uniform, unrestricted airflow and low friction loss.

Coils are of copper and copper-

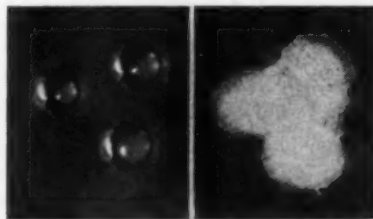


alloy. Automatic brazing of all passages and metallic bonding of fins to tubes assure longer life, continuously high heat transfer capacity.—*Modine Manufacturing Company, Racine, Wisconsin.*

Use the Coupon on Page 137

## 27—Non-Acid Flux

Divco No. 229 soldering flux permits sweating of long, deep and irregular seams as well as diaphragms and other critical solder-



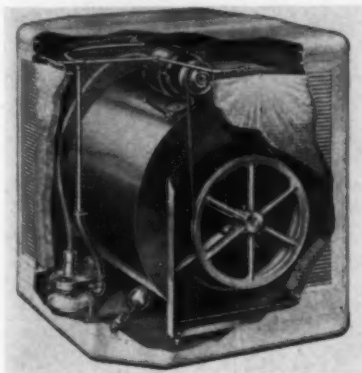
ing work. The flux penetrates to the bottom of pits and recesses.

No. 229 Flux does not pit, corrode or discolor. It produces minimum smoke and fumes and the small residue is easily removed with water.—*Division Lead Company, Dept. 119, 836 W. Kinzie St., Chicago 22.*

## 28—Evaporative Cooler

A 1948 Model CoolerAir is announced.

Fiberglass evaporative filter (spun glass filaments) is sprayed by special nozzles and through which the air is drawn by a powerful fan, rubber mounted for quiet operation



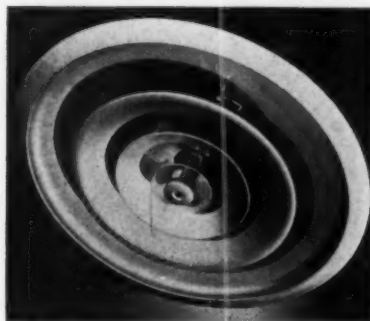
with minimum vibration. Air delivery is 2,300 to 8,000 cfm.

Other features include a special, high performance circulator pump driven by a flexible shaft from main motor; rust-resistant fan; positive action, non-clogging water feed valve; and non-corroding all-aluminum outer casing, with trim, modern lines.—*Payne Furnace Company, Beverly Hills, Calif.*

## 29—C-1 Anemostat

A new type air diffuser provides any desired air flow pattern at the turn of a knob. An adjustment mechanism varies the vertical position of the third cone, thus producing different air flow patterns ranging from draftless diffusion to downward projection, without affecting air resistance.

This advanced type air diffuser



utilizes the Anemostat aspiration principle which draws room air into the device and mixes it with supply air.

This adjustable feature permits the Type C-1 Anemostat to be used for heating, ventilating or cooling in any combination. Adjustment of the device can also be accomplished by remote automatic or manual control.—*Anemostat Corporation of America, 10 East 39th Street, New York 16, N. Y.*

## 30—Vi-Speed Vise

Model 610 Vi-Speed—an air-operated foot-controlled vise—is about 75 per cent heavier than the standard model No. 457. The new model was patterned to increase the range of holding, bending, crimping, pressing riveting.

Air regulator and gauge provide



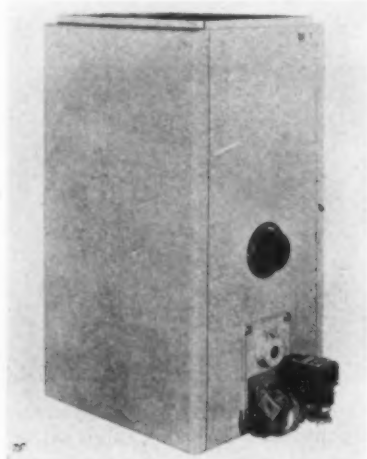
jaw pressures ranging from zero pounds to 50 times available air pressure. Adjustable safety screw permits quick limiting of vice jaw travel, preventing complete jaw closure and guaranteeing safety.—*Van Products Company, 1509 G. Daniel Baldwin Bldg., Erie, Pa.*

## EQUIPMENT DEVELOPMENTS

Use the Coupon on Page 137

### 31—GAV-O Furnace

The new Capitolaire series GAV-O gravity oil furnace is fabricated from heavy gauge furniture steel and finished in baked enamel, has a shipping weight of 288 pounds,



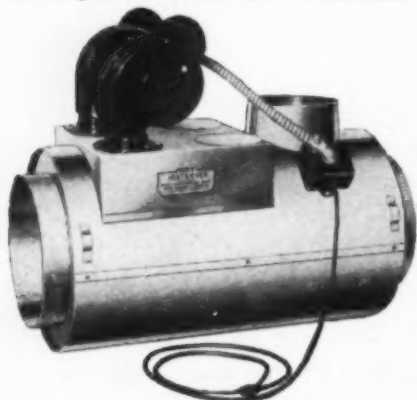
and is 25¼-in. wide, 52¾-in. high, and 28¾-in. long.

The firebox and radiator are built of copper bearing steel, shielded arc welded.

The GAV-O is designed for small homes having 50,000 to 65,000 Btu heat loss.—*United States Radiator Corporation, 1500 United Artists Bldg., Detroit 31.*

### 32—Heatriever

"Heatriever" is a home-heating device utilizing waste stack heat. The device fits around the smoke pipe of the home furnace or boiler, retrieving the waste heat and delivering a constant flow of heated



air, forced by fan and directed by means of an auxiliary duct.

Installation is made without cut-

ting the smoke pipe.—*Heatriever Division, Crane Equipment & Engineering Company, 73 Theroux Street, Waterbury, Connecticut.*

### 33—Limit Control

A new model Cam Stat is a variation of Cam-Stat's basic Type A control and is designed as a high limit control on unit heaters and forced air furnaces. Compact design (only 1-9/16 in. in diameter and 1-13/32 in. in depth), permits integral mounting. Approved by the Underwriters' Laboratories.



Another Cam-Stat unit identical in size is available for control of fans on unit heaters and forced air furnaces.—*Cam-Stat, Inc., 2310 South La Cienega Boulevard, Los Angeles 34, California.*

### 34—Life Saver Ladder

An industrial ladder—double step ladder—has several special safety features. It is balanced, has non-skid tread on the steps, 7 x 11½ in.



platform, and is available in lengths of 2 to 16 feet.

The Sherry Life-Saver ladder is made of aluminum. Brass shims between all moving surfaces, and bushing in the hinge joint, prevent wear in the aluminum.—*J. B. Sebell Industries, 300 S. Los Angeles St., Los Angeles 13.*



### 35—Workhorse Motor

A light weight, heavy duty motor of capacitor type—single phase, ½ horsepower, 115/230 volts—is announced. Light weight is due to aluminum and brackets and simplicity of construction. Weight is 29 lbs. Due to its low slippage, 2 pole develops 3,520 rpm; 4 pole, 1,760 rpm. Draws 6.8 amp. on 110 volts and 3.4 amps. on 220 volts. It operates on either 50 or 60 cycles. It has a 16-gauge sheet steel case and is lubrication-sealed for life. Having ball bearings throughout, it can be run in any position, operating at 40 deg. temperature.

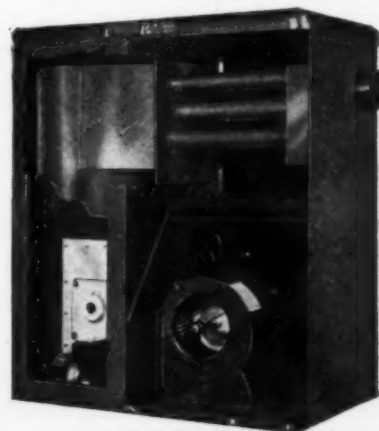
Three-phase, ¾ hp is also available, as well as special mountings.—*Crozier Machine Tool Co., Hawthorne, Calif.*

### 36—Automatic Units

Front Rank has added a new line of automatic units—gas or oil—for the small home.

The high-boy air conditioning unit, 80-OH, for the utility room has a 64,000 Btu output.

Two basement unit models for

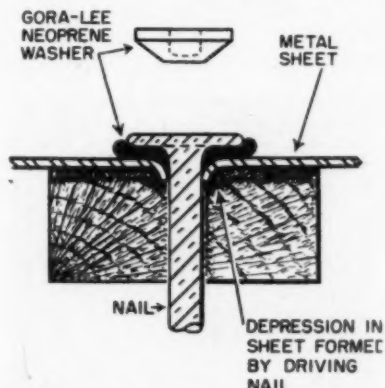


gravity and forced air have capacities of 72,000 Btu output.

These models are engineered and constructed to use gaseous or liquid fuel (including bottled gas) and with the burner designed as an integral part of the unit. It is possible to switch from gas burner to oil burner.—*Front Rank Furnace Company, Div. Liberty Foundry Company, 2500 Ohio Ave., St. Louis 4.*

### 37—Neoprene Washer

Neoprene washers are already in position under the heads of many umbrella-head, screw-type and straight nails for fastening metal



roofing and siding.

This development was made possible by a special composition and cure for the neoprene compound, and the perfection of high-speed machinery for mating nails and washers at the factory.—*The Gora-Lee Corporation, Stratford, Conn.*

### 38—Auto-Air Kit

The new Auto-Air kit meters combustion air to booster draft equipped pot type oil burners in proportion to oil flow and fire.

The Auto-Air shutter fits on the blower intake opening of most pot fans. Shutter is wired in series



with an electric top which is mounted on the constant level oil control. Both shutter and electric top are controlled by thermostat.

When the thermostat calls for heat, the electric top increases oil flow from pilot to high fire. At the same time, the shutter gradually begins to open. As fire builds up, shutter opens wider, until, at high fire, shutter is wide open.—*Automatic Products Company, Milwaukee 10, Wisconsin.*

### 39—Klee Sealant

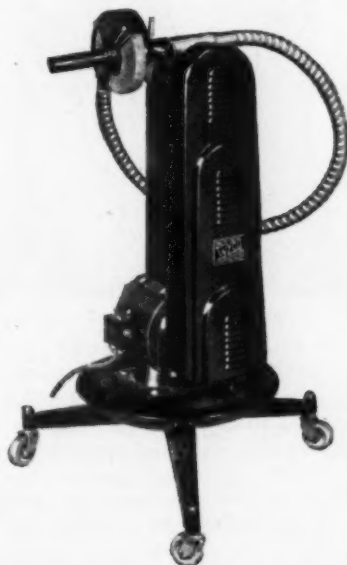
A new mortar sealant—*Klee Sealant for Mortar between Glass*

*Block*—coats the exterior mortar joints, adheres to the mortar and forms a tight flexible bond to the glass, expanding and contracting with the mortar as well as the glass without rupturing the film. It is of plastic-like consistency and can be applied with a caulking gun, or thinned down with suitable solvents for brushing consistency.

This product remains rubbery, and bonds tightly to mortar, glass, tile, brick, metal and wood.—*The American Fluresit Company, 635 Rockdale Ave., Cincinnati, Ohio.*

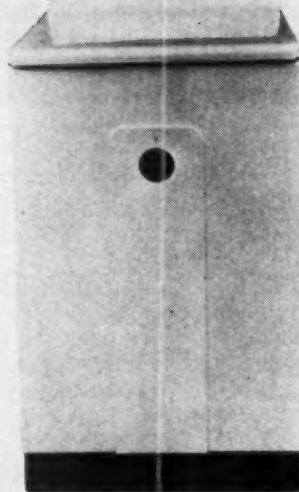
### 40—Flexible Shaft

The new WYCO "Streamflex" model is designed to combine convenience and safety in a streamlined, cabinet-enclosed, multi-speed machine, of all-welded steel construction. All pulleys and belts are fully enclosed in the dust-free cabi-



net, cover of which slides up for convenience in adjusting speeds, or may be removed for belt changing. The entire cabinet swivels on a ball-bearing motor base, with 16 in. tool tray. The machine is designed with low center of gravity.

Another feature is the WYCO locking shaft holder, which holds shaft and grinding wheel for stationary grinder. The Streamflex is equipped with WYCO flexible shaft with patented WYCO non-metallic innerliner, handpiece, 6-inch grinding wheel, wheel arbor and steel wheelguard with outboard handle. Five models are available— $\frac{1}{2}$  hp (1400-2400-4500 rpm);  $\frac{3}{4}$  hp (1800-3600 rpm);  $\frac{3}{4}$  hp (3600-6000 rpm); 1 hp (1800-3600 rpm); and 1 hp (3600-6000 rpm).—*Wyzenbeek & Staff, Inc., 838 W. Hubbard St., Chicago 22.*



### 41—Water Heater

An automatic, table-top model electric storage water heater with 30-gallon capacity, is enclosed in a steel jacket—white baked enamel.

The heating element is nichrome imbedded in magnesium oxide and sealed in a seamless copper tube.

The fingertip control dials on the heads of thermostats assure accurate water temperature regulation. Instant power shut-off at set temperature insures safety.

The series 60-T model is 36 inches high.—*Rheem Manufacturing Company, 570 Lexington Ave., New York City 22.*

### 42—Dispensing Faucet

A new dispensing faucet is easily taken apart for cleaning to meet rigid board-of-health requirements. Finger-tip control gives positive



flow and a strong spring gives drip-less shut-off.

Faucet bodies are available in stainless, chrome, or brass, equipped with modern handle of specially molded plastic.—*Economy Faucet Company, 12 New York Ave., Newark 1, N. J.*

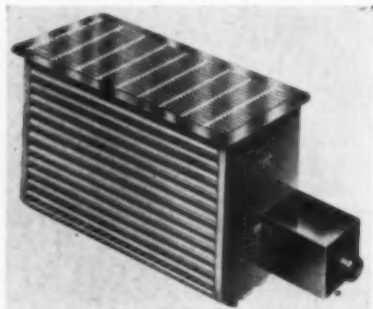
## EQUIPMENT DEVELOPMENTS

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### 43—Series 1600 Heater

A new gas-fired floor furnace assures maximum safety, heating efficiency and economy.

Easily installed for either manual or automatic operation this 1600 series heater is available as a flat register, standard dual wall or space saver wall model, burning natural, manufactured, mixed gas or liquid



petroleum. A down draft diverter prevents sudden flue drafts from extinguishing the burner.

The heating elements are of die-formed steel. Baffles slow the escape of hot gases.

The flat register model is made in three sizes—25,000, 35,000 and 50,000 Btu input. The standard wall model comes in 25,000 and 35,000 Btu input sizes. The space saver wall model has a 50,000 Btu input.—*Rheem Manufacturing Company, 570 Lexington Ave., New York 22.*

### 44—Di-Acro Notcher

The Di-Acro Notcher is a shearing unit which will rapidly and accurately cut notches in sheet materials.



A 90-degree notch of any size, within the capacity of the machine, can be accurately cut in one operation either at the corner or in any position along the edge of a sheet.

It is possible to shear angles both smaller and greater than 90 degrees.

An extremely flexible gauging arrangement allows a notch of any dimensions desired to be located.—*O'Neil-Irvin Manufacturing Co., Lake City, Minnesota.*

### 45—Fyrite Kit

The Fyrite combustion-testing master kit contains Fyrite CO<sub>2</sub> indicator, Model MZF draft gauge, and Tempoint stack thermometer.

The range of the Model MZF Draft Gauge is 0.25 in. up-draft to 0.05 in. down-draft. Free movement of pointer at zero indicates "puff-backs."

The range of the Tempoint stack thermometer is 100 to 950 F. in 10

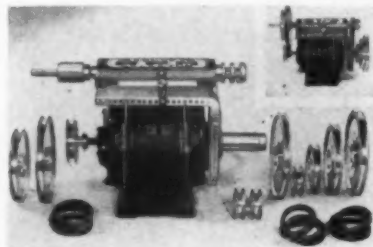


deg. divisions. The Tempoint is supplied with a slip-on handle.

Fire Efficiency Finder is included. By setting CO<sub>2</sub> and stack temperature readings on this slide rule, heating efficiency and stack loss can be read without calculations.—*Bacharach Industrial Instrument Co., 7000 Bennett St., Pittsburgh.*

### 46—RPM Selector

McKelvey's RPM Selector, a new unit that attaches to and becomes a part of the average electric motor on power tools, permits a complete

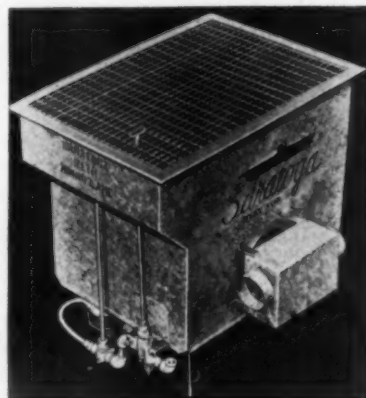


selection of motor speeds from a low of 66 rpm to a high of better than 10,000 rpm. This, when applied to the conventional power tool, will give that equipment "spindle speeds" ranging from 20 rpm low to a high of three times the leaving

the motor speeds.—*Sunset Equipment Company, 1813 W. 11th St., Los Angeles 6.*

### 47—Floor Furnace

The Saratoga flat top floor furnace is finished in golden bronze Hammertone and burns natural or liquified petroleum gas. These Sara-

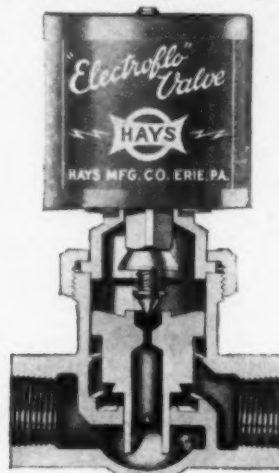


toga furnaces with Moduflame have heavy duty heating elements with fire box of 11 to 16 gauge.

The plus 4 features are: Moduflame; bellows type throttling thermostat is operated by the temperature of the air as it returns into the control section of the furnace; safety valve installed ahead of the burner and thermostat valve to effect a complete shut off of gas in case of line stoppage or pilot flame failure; and Thermpate, a special copper bearing fire box steel.—*Mahl Mfg. Co., 3081 E. Slauson Ave., Huntington Park, Calif.*

### 48—Electroflo Valve

The Electroflo valve will operate on water, oil or air. It combines the power of electricity, flow pressure



and gravity to deliver the maximum flow at minimum operation and product cost.—*Hays Manufacturing Co., Erie, Pa.*

## 49—AC Welders

A new line of AC arc welders offers a number of unusual features. All models are supplied with P&H "Dial-lectric" control. This simplified control eliminates the need for moving coils or cores, worm gears, sprockets and chain or lever adjustments. Without cranks or plug-in stations, current selection is made by turning a single dial



which requires but a three-quarter turn to cover the full welding range.

All industrial models of this new P&H series are designed for remote control. Another improvement is the high-low welding range. Indicated on the "Dial-lectric" control dial are two separate ranges, a high for general-purpose welding and another for light-gauge welding.

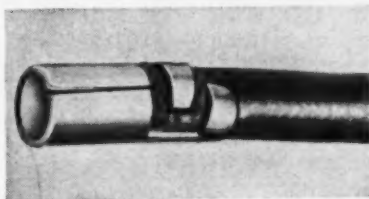
The new P&H ac welders are offered in intermittent industrial and heavy-duty models, ranging up to 625 amperes.—*Harnischfeger Corporation, Welding Division, 4400 West National Avenue, Milwaukee 14.*

## 50—Solderless Terminals

Efficient connections on the high voltage igniter leads in domestic oil burners are provided by a new type of solderless ignition terminal.

Heavier construction and an improved "snap-on" action assure a positive, high-efficiency contact with the igniter stud. Maximum electrical contact with the wire of the high voltage lead and excellent resistance to corrosion is afforded by two insulation piercing contacts of special design that enter the cable parallel to the strands of the wire, achieving an unusually large area of contact without any tendency to shear the wire strands. A unique spiral crimp is used to at-

tach these terminals forcing the contact points into the cable with a curling action from opposite sides



for maximum grip and tensile strength.

Installation with either a hand tool or power press die is accomplished in a matter of seconds.—*Aircraft-Marine Products Inc., 1652 North 4th Street, Harrisburg, Pa.*

## 51—Zincilate Coatings

Two new types of anti-corrosive Zincilate coatings, which will air-dry without baking, have been announced.

The new Zincilate coatings are sufficiently flexible that sheets, and forms can be bent double after coating, without breaking the protective coating.

Zincilate is adaptable to production line application by dipping, spraying, brushing, or roller coating, with conventional finishing equipment. It can also be used for maintenance and repair of existing structures.—*Industrial Metal Protectives, Inc., Dayton 2, Ohio.*

## 52—Model 60 Tester

A universal-type electric appliance tester is designed for repairmen. The Model 60 tester will show the true condition of any electrical appliance.

The Hanlan test unit may be used for trouble shooting, checking



open circuits, continuity, grounds, short circuits. It will test thermostats under working conditions, or indicate insulation resistance and leakage due to moisture in wiring systems. It will detect presence of

high resistance grounds and leaks in motor frames and armatures. It will check for live and dead circuits, locate grounded neutral wire of a three-wire system, and is an aid in the heat regulation of equipment such as solder pots and irons without thermostat control.

The instrument carries an A. C. ammeter range of from 0 to 15 amps. Size is 7¼ in. high, 6-in. wide, 2 in. deep. Weight is 3 lbs.—*Hanlan Company, 1416 W. Jefferson Blvd., Los Angeles 7.*

## 53—Incinerator

The Cinerator is 20 x 22 x 35 inches, has an internal capacity of 3¼ cu. ft. and weighs 120 pounds net.

A gas jet for use with manufactured, natural or bottled gas assists in dehydrating refuse and provides auxiliary firing.

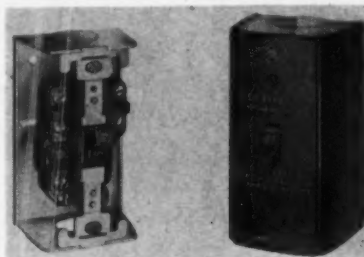
Twin grates dump toward the center into large-sized ash drawer.

Top is cast aluminum, insulated with high-temperature mica cement. A double burning principle to recirculate fumes and gases through the fire, thus burning completely, eliminates odors and smoking. Finish is two-tone baked wrinkle enamel.—*Main Electric Co., Inc., Rochester 2, N. Y.*



## 54—Starting Switch

The new Bulletin 600 manually operated snap switch for starting motors of one-horsepower or less is a streamlined unit with molded plastic cover. An overload device operates on the soldered ratchet



principle. It is impossible to hold the switch closed under sustained overload, but can be reset easily, with the regular switch lever, after the overload is cleared.

The switch can be furnished without enclosure for mounting in a standard switch box or machine base.—*Allen-Bradley Company, 1335 S. First St., Milwaukee 4.*

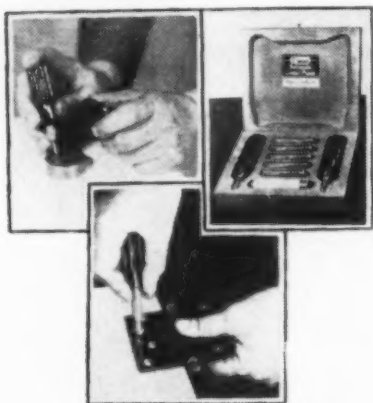
## EQUIPMENT DEVELOPMENTS

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### 55—Center Punches

Several automatic center punch units and various accessories which are directly attachable to these units are being introduced.

The basic mechanism of the automatic center punch consists of an internal spring-actuated hammer which is released upon specified hand pressure. This one-hand action permits a great increase in speed and accuracy in layout work, and frees the other hand for hold-



ing operations. Other advantages are: a plastic handle for maximum comfort, and an extremely short length (4 inch) for greater accuracy.

Two models are available: The No. C-12 punch has a pre-set spring pressure of 15 lbs. The C-15 punch has spring pressure adjustable from 8 to 20 lbs. When set at the highest pressure, the C-15 unit has been found useful by sheet metal men for marking through 20 ga. sheet iron.

The accessories permit the accomplishment of a variety of mechanical operations.—*Vinco Products, 326 Bond St., Asbury Park, N. J.*

### 56—"Heliarc" Welding

A new AC welder especially designed for use with modern "Heliarc" equipment as supplied by Linde, using helium or argon for inert-gas-shielded welding, is announced. This equipment is adapted for welding magnesium alloys, aluminum, stainless steels, high carbon and other alloy steels, brass, Monel, Everdur, and other hard-to-weld metals.

Model TIH-300-s embodies high

frequency stabilization to insure easy starting and dependable maintenance of the gas-shielded arc with practically no rectification of the AC current passing through it. A window is provided through which the spark gap may be ob-

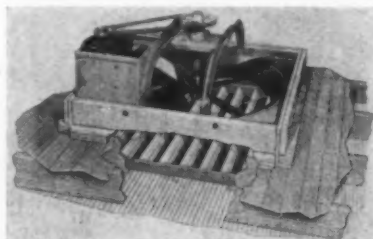


served, with a door through which it may be reached for adjustment.

Pressing the foot pedal starts the arc through the tungsten electrode, and simultaneously opens the valves permitting the shielding gas and the cooling water to flow through the special torch. Releasing the pedal breaks the arc—but permits gas and water to continue flowing for a predetermined length of time, adjustable up to 180 seconds. This delaying action protects the weld metal from oxidation until it has had time to solidify after the arc has been broken. A strainer in the water line ahead of the valve is accessible through a hinged door for cleaning.—*Hobart Brothers Company, Troy, Ohio.*

### 57—Fan Package

The Silent Breeze Gold Seal line of ventilating equipment has been announced. Bearings of both fan and motor are lubricated and sealed



for life. No further lubrication is required.

Included in the "H. M." fan package in both vertical and horizontal models is a Silent Breeze Gold Seal

ventilating fan; a new-type, built-in suction chamber; automatic ceiling shutter, and electric motor. Assembly is complete, except for automatic time switch and ceiling shutter.

Horizontal units come in five models, ranging in capacity from 4,200 to 10,000 cfm. Vertical units in nine models with capacities ranging from 4,200 to 19,900 cfm.—*Holcomb & Hoke Mfg. Co., Inc., 1545 Van Buren St., Indianapolis 7, Ind.*

### 58—Time Switch

A new time switch, known as the Palo Time Switch Sr., is a completely self-contained unit, incorporating the necessary equipment to turn on or off any type of electrical laboratory apparatus on a predetermined time schedule. It operates at 110 volts, AC. Among the suggested uses are (1) turning on a furnace or oven, (2) turning off processing equipment, (3) the automatic timing of such processes as sterilizing, centrifuging, drying,



drilling, evaporating, etc., and (4) to insure that certain types of equipment in daily use are turned off at closing time.

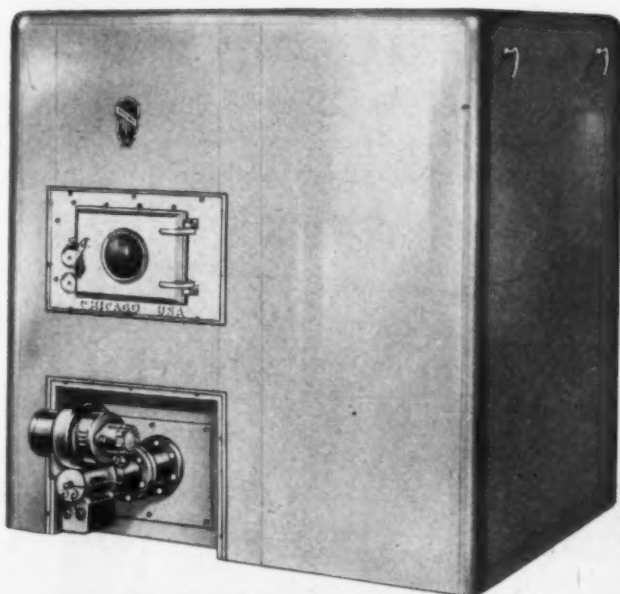
The clock, of conventional design, is self-starting, with a sweep second hand. A switch dial, geared to the clock mechanism, revolves at the rate of one revolution per day. The dial face bears two adjustable switch fingers—one for off, the other for on—which operate a snap-action switch. This, in turn, operates a relay of the double pole type, capable of breaking 20 amps of non-inductive or heater load. The relay is also rated at 1 hp of motor load.

The Palo Time Switch Sr. is housed in a case of sheet steel, with black crackle finish. The operating cycle repeats day after day, as long as the clock is not disconnected.—*Palo-Myers, Inc., 81-83 Reade St., New York 7, N. Y.*

# THE HESS CLIMATE MASTER

(easily converted to coal or gas)

**represents the greatest advance  
in Automatic Radiant Heating**



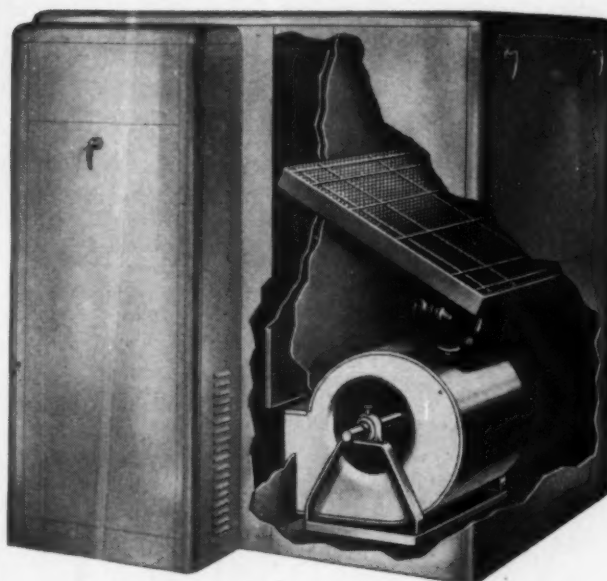
**Standard Model—without vestibule**  
(Flange or base-mounted burner optional, depending upon availability)

The cut-away view at the right shows the arrangement of the forced air unit, air filters and heat transmitter. The silent but powerful blower draws the cool air from the rooms thru the filters to remove germ-laden dust and dirt. The cleansed air then passes uniformly and under pressure over the heated surfaces of the heat transmitter and the humidifying element. The filters, motor and blower are in the cool air circuit and therefore are not subject to overheating damage and fire hazard as with other units that draw heated air thru the blower compartment.

The Hess Climate Master has an outstanding advantage over conventional oil-fired furnaces because it is designed for conversion to other fuels, should fuel conditions make this necessary, without sacrificing heating efficiency.

**T**he Hess Climate Master represents the greatest advance in the design and engineering of automatic comfort-making equipment. The powerful, efficient, radiant heat transmitter, oil burner, forced air unit, filters and self-flow humidifier are all combined within one compact, attractive baked enamel cabinet. Best of all, luxurious comfort, health benefits, cleanliness and maximum fuel economy are the outstanding features of this fine equipment.

Models illustrated are equipped with pressure oil burner, completely automatic in operation, designed as an integral part of the Climate Master to assure correct performance, maximum operating efficiency and greatest fuel economy. The de luxe models are furnished with a vestibule enclosure (shown in the cut below) which conceals the oil burner assembly.



**DeLuxe Model—with vestibule**  
(Blower unit interchangeable for either side of unit)

A PRODUCT OF

*The Hess Company*

GENERAL OFFICES: 1211 S. Western Avenue, Chicago 5, Illinois

FACTORIES: Chicago and Gary, Illinois

# **Field**

## **BAROCHEK**



### **SELLS Because It SAVES**

Barochek, the scientific combination check damper and barometric draft control, is the profit-proved answer to the public's question, "How can I make my fuel go further?" 8,000,000 owners of hand-fired heating plants need Barochek to:

**SAVE COAL • SAVE TIME • SAVE MONEY**

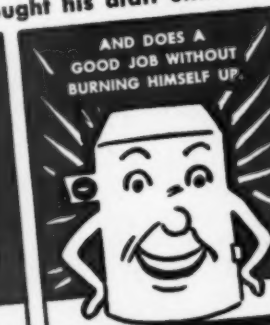
#### **WITHOUT BAROCHEK**

Frank Furnace was a mighty sick man. He had all the symptoms of uncontrolled draftitis.



#### **BUT THEN... DOCTOR DEALER PRESCRIBED BAROCHEK**

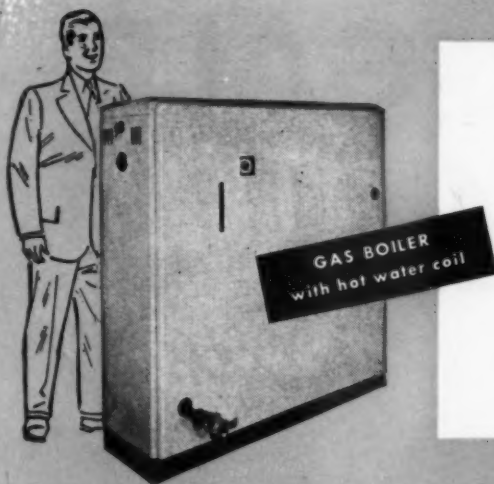
**WITH BAROCHEK**  
Frank Furnace became a new man. Barochek brought his draft under control, and now...



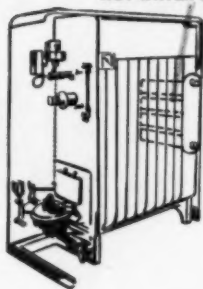
**YOU will PROFIT with the fast-selling Field Barochek. Write or wire TODAY for descriptive literature and complete details.**

**FIELD CONTROL DIVISION**

H. D. CONKEY & COMPANY  
MENDOTA, ILLINOIS



DOMESTIC  
HOT WATER COIL



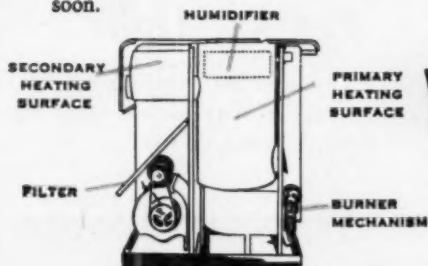
### It's News!

Built-in domestic hot water coil optional. Same cast iron heating sections can be used with different sets of trim for hot water, steam or vapor heating systems. Eight sizes: from 95,000 Btu. to 325,000 Btu. input.

# 3 NEW LINES!

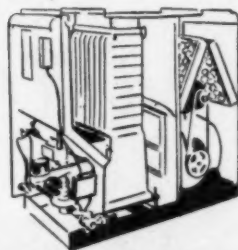
### It's News!

Designed especially for small, low cost homes, this horizontal OIL burning unit comes completely assembled. Jacket finished in durable, heavy white enamel. Low pilot fire—as little heat as a gas pilot flame. Capacity: 75,000 Btu. Other oil units to be announced soon.



### It's News!

Completely assembled when delivered, saves installation time. Jacketed in beautiful, heavy white enamel. Available in 8 capacities, from 90,000 Btu. to 420,000 Btu. input. Horizontal construction allows ample head room for low basements and ductwork.



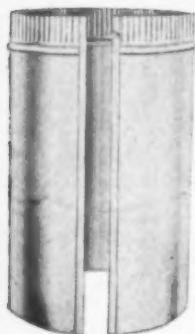
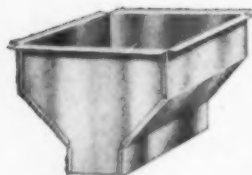
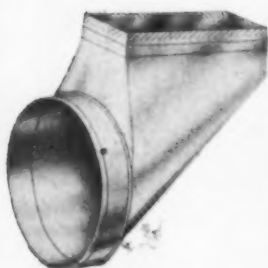
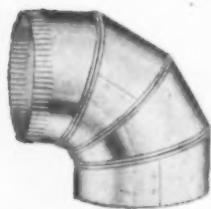
**"We've Come A Long Way Since Then!"**  
You need detailed information on these 3 NEW Richmond lines. Telephone, telegraph or air mail TODAY for your facts and figures. Dept. 2-AA., Richmond Radiator Corporation, 19 East 47th Street, New York 17, N. Y.



**RICHMOND RADIATOR COMPANY**  
AFFILIATE OF REYNOLDS METALS COMPANY

Enameled Cast Iron Ware • Vitreous China • Perma-Glass • Gas Boilers • Oil and Gas Winter Air Conditioners • Gas Gravity Furnaces • Radiators

Showing just a few  
Char-Gale fittings



# CHAR-GALE ALUMINUM *Fittings*

THE ANSWER TO SUCCESSFUL  
AND PROFITABLE FURNACE  
INSTALLATION . . . . .

## Feather Light



The easiest handling fittings ever made! Cut strain and time on installations—cut transportation time and cost—cut handling time on the job.

## Stronger - Longer Lasting



Rustproof clear through! Installations are stronger with aluminum—last years longer.

## Better Looking



More customer satisfaction! The smooth, bright beauty of these fittings does not discolor with heat or time. Needs no painting or covering—just naturally beautiful.

# *And It Costs No More!*

PREFABRICATED  
DUCTS AND FITTINGS  
FOR WARM AIR  
HEATING

## CHAR-GALE

MINNEAPOLIS  
OMAHA

ANOTHER PRODUCT OF CHAR-GALE METAL CRAFTSMEN

"NO HEATING PLANT IS BETTER THAN ITS INSTALLATION — NO INSTALLATION CAN BE BETTER THAN ONE OF CHAR-GALE FITTINGS"

# Make Peerless Electric Your Headquarters for **PACKAGE UNITS AND BLOWERS**

- **PEERLESS EQUIPMENT IS COMPLETE**  
Manufactured entirely in our own modern plant—not an assembled line.
- **PEERLESS EQUIPMENT IS PRICED RIGHT**  
bigger profits for you.
- **PEERLESS EQUIPMENT IS DEPENDABLE**  
reducing service worries on your part.



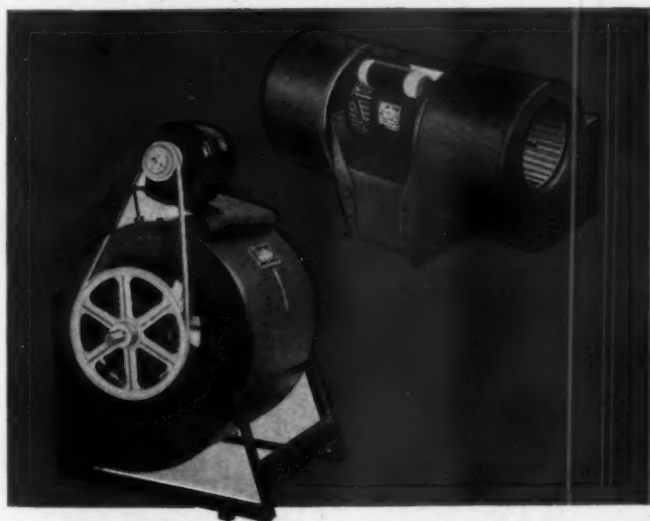
## PEERLESS AIRBOY DIRECT DRIVE BLOWER

Here's a direct drive blower that delivers 850 cubic feet of air per minute—sufficient for a house of approximately 10,000 cubic feet. 3-speed motor with motor blower unit rubber cushioned. Blower wheel dynamically and statically balanced, a very compact unit of attractive appearance, shipped assembled, ready to work.



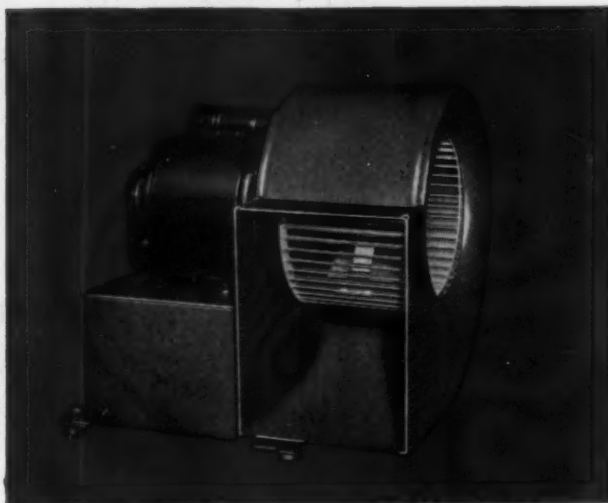
## PEERLESS BELT DRIVE PACKAGE UNITS

New modern cabinet of rounded corner construction. Each unit complete. Includes cabinet, Peerless blower, Peerless motor, filters, belt, pulleys, automatic belt tension device, bonnet control and felt pads. A variable pitch motor pulley provides speedy adjustment for winter and summer use. Sizes from 9" to 21", 9" to 15" sizes shipped completely assembled.



## BLOWER ASSEMBLIES—BELT AND DIRECT DRIVE

Belt drive assemblies with either top or rear mounted motor arrangement for those who incorporate this blower in their own furnaces or make up their own cabinets. Motors on both types are mounted with resilient bases to prevent vibration. Direct drive assemblies use specially designed Peerless capacitor motors that are exceptionally efficient and quiet in operation. Blower wheels, direct connected to motor, are forward curved, dynamically and statically balanced.



## PEERLESS AIRBOY BLOWER ASSEMBLY

This is the same motor and blower unit, without cabinet, that is used in the Airboy Package unit. Note the compactness of the complete assembly. The two motor bearings are the only bearings in the unit.

THE *Peerless Electric* COMPANY

ESTABLISHED 1893

• WARREN, OHIO

● MANUFACTURERS OF MOTORS  
FANS AND BLOWERS

# NIAGARA

**GAS • COAL • OIL FURNACES**

**Backed by 56 years of experience in manufacturing residential heating equipment**

• In these days of fuel restrictions, you must have a heating line that fills *all* requirements. That's Niagara—backed by 56 years of manufacturing residential heating equipment—a line that has a wide

reputation for high-quality construction and economical operation—a line that enables you to meet any residential heating requirements, gas, coal or oil. Write for the complete Niagara story.



**GAS-FIRED**—Niagara gas-fired furnaces are available in 17 different models. The Series 20 winter air-conditioners and gravity furnaces, all with cast-iron heating elements; the Series 10 air-conditioning and gravity units with steel combustion chambers; and two utility models of 75,000 and 100,000 BTU.

**COAL-FIRED**—Niagara coal-fired furnaces are available in many sizes, with cast-iron or steel heat exchangers, and in round or square casings. Niagara blowers are supplied as package units for installation with square-cased furnaces.



*See our Exhibit*  
at Greater Cleveland Home and Flower Show

**OIL-FIRED**—Niagara Oil-Fired Winter Air Conditioners are available in two sizes—90,000 and 135,000 BTU at registers. Completely equipped with automatic controls and pressure (gun-type) burner. Available also without burner.



**NIAGARA FURNACE DIVISION • The Forest City Foundries Company • 2500 West 27th Street, Cleveland 13, Ohio**

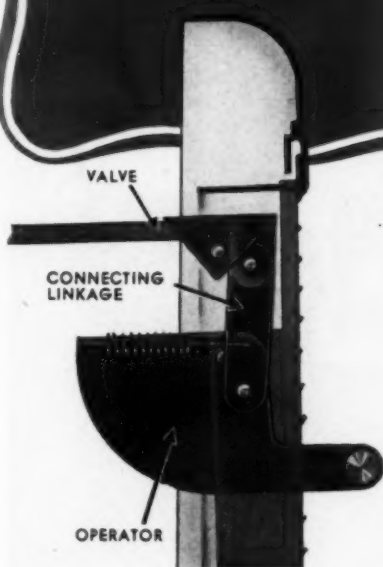
**GAS, COAL** *NIAGARA* **OIL**

**GRAVITY AND WINTER AIR CONDITIONING UNITS**

# **AIR CONTROL** *Announces* *a beautiful New Baseboard* **GRAVITY REGISTER** *with Removable Face*

*featuring*  
**AIR CONTROL'S**  
*Sensational*  
**BALANCED DAMPER!**

**OPERATES EASILY!**  
**HOLDS IN ANY POSITION!**  
**NO SCREWS TO ADJUST!**  
**NO FRICTION PARTS**  
**TO WEAR!**



The simple—positive "Balanced Damper" Mechanism. See it at your nearest Air Control Jobber or write for complete information.

AIR CONTROL proudly presents the New No. 50 Baseboard Gravity Register — styled with simple modern lines that attractively blend with any room interior. Removable face provides simple streakproof installation. Horizontal fins may be easily adjusted for forced air application.

The BALANCED DAMPER embodies a new principle in valve mechanisms — holds securely in any position — without friction parts or adjusting screws. Requires no adjustment — easy to operate — opens full 90°. The ideal register for Gravity or Forced Air Conversions.

**AIR CONTROL PRODUCTS, Inc.**  
**COOPERSVILLE MICHIGAN**

*A complete line of* **REGISTERS • GRILLES • STACKHEAD DAMPERS • CEILING DIFFUSERS**  
**VENTILATORS • ACCESSORIES . . . Mfgs. of LEIGH Building Products**

## NEW LITERATURE

Use the Coupon on Page 137

### 214—Gas Vent and Flue Pipe

A new Metalbestos Gas Vent and Flue Pipe catalog describes in detail the problems of gas appliance venting and points out the advantages of Metalbestos patented pipe-within-a-pipe construction.

Photographs and cut-away drawings show the construction details of the pipe which is manufactured in both round and oval shapes in 3 foot, 5 foot and 10 foot lengths. The line of fittings which makes Metalbestos readily adaptable to every type of gas appliance is pictured and described.

Specifications, dimensions and weights of the pipe and fittings are included, along with instructions and helpful suggestions for installers.—*Williams-Wallace Company, Dept. A, 168 Hooper Street, San Francisco 7, Calif.*

### 215—Solder Leaflet

Another in its series of special descriptive leaflets on non-ferrous metals, this one on solder, has just been issued. The leaflet, illustrated and in two colors, describes basic and special solder types and gives application data. Discussed are acid core, rosin core, solid wire, and body solders; also, bar, strip, triangle, segment, drop, pig and foil.

This leaflet, and earlier editions in the series (Lead

and Lead Lined Valves, Metals' Directory, Zinc Dust) are available.—*Federated Metals Division, American Smelting and Refining Company, Dept. S.J, 120 Broadway, New York 5, N. Y.*

### 216—Sheet Metal Work

Sheet Metal Work is a manual of practical self-instruction in the art of pattern drafting and construction work in light and heavy-gauge metal, by William Neubecker.

Contents: Tools and methods of obtaining patterns, developments by triangulation, workshop problems, problems for light gauge metal, coppersmith's problems, problems for heavy metal, skylights, roofing, cornice work, patterns for forced-air fittings, practical problem in mensuration for sheet metal workers. Index.

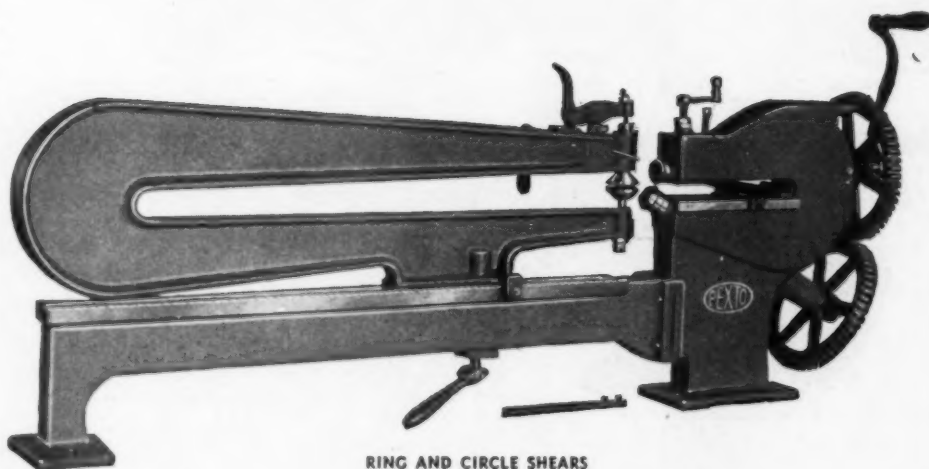
Fifth printing, 360 pages, 412 illustrations, washable cloth binding. Price \$2.50.—*American Technical Society, Drexel Avenue at 58th Street, Chicago 37.*

### 217—Alloy Steels Stock List

A 24-page booklet lists sizes, shapes, finishes and conditions of medium carbon, high carbon, case hardening, free machining, carbon-manganese machinery steel, heat treated alloys and tool steels available for shipment from the 12-plant group of Ryerson Steel-Service warehouses. Booklet also explains the Ryerson Certified Alloy Steel Plan and contains tables of AISI and SAE Standard Steel Compositions.—*Joseph T. Ryerson & Son, Inc., P. O. Box 8000-A, Chicago 80, Illinois.*

## PEXTO MEANS SHEET METAL WORK AT ITS BEST

Smooth, accurate response to controls and delivery of maximum power gives the operator of PEXTO Machinery exactly what he needs for superior work. There's a type for every need . . . with many years of experience to back it up. You are safe in saying "PEXTO."



RING AND CIRCLE SHEARS

4PX48

THE PECK, STOW & WILCOX COMPANY — Since 1785 — SOUTHLINGTON, CONNECTICUT, U. S. A.

## PRESSURE BURNERS



4 Fluid Heat models  
Firing Rates from 7/10 to 12  
gallons per hour.

## ROTARY BURNERS



2 Fluid Heat models  
Firing Rates from 1/4 to 5 1/4  
gallons per hour.

# FLUID HEAT Gives You a Double Crack at Today's Replacement Business!

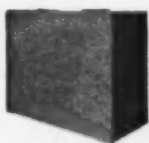
## PLUS . . . FEATURES TO GET MORE HEAT OUT OF EVERY DROP OF OIL!

- "Fuel Saver" Control, incorporating regulation on discharge side of fan, insures constant velocity of combustion air at any volume . . . provides high combustion efficiency. Simplified adjustment. Screwdriver is only tool required.
- "Flameflex" Hearth Ring of stainless steel, in Wall Flame Rotary models, is ingeniously designed to compel the flame to wipe the walls of the heater, extracting maximum heat from fuel oil.
- Boiler Burner Units are designed on the well known, downdraft Scotch Marine principle for maximum heat absorption. Water jacket faces the flame on top, bottom and three sides.



3 Boiler Burner Units  
Capacities from 475 to  
840 sq. ft. of standing  
hot water.

AND



3 Air Conditioning  
Furnaces, from  
85,000 to 200,000  
B.T.U. per hour.

When you're selling Fluid Heat, it makes no difference whether your prospects want to replace pressure burners or rotary burners. Fluid Heat gives you *both* . . . to *double* your chances of satisfying and selling more customers . . . and to help take up the slack in original installation sales caused by the fuel shortage! What's more, Fluid Heat's *fuel-saving* features, like those described here, give these Burners *extra* sales-appeal under today's conditions!

Write today for full details on a Fluid Heat Dealer Franchise. Learn how Fluid Heat offers you a wide choice of models—a wide-awake development laboratory to keep you ahead of competition—husky construction to reduce your service problems—and a sound, competitive price structure. Address: FLUID HEAT DIVISION, Anchor Post Products, Inc., 6720 Eastern Ave., Baltimore 24, Maryland.

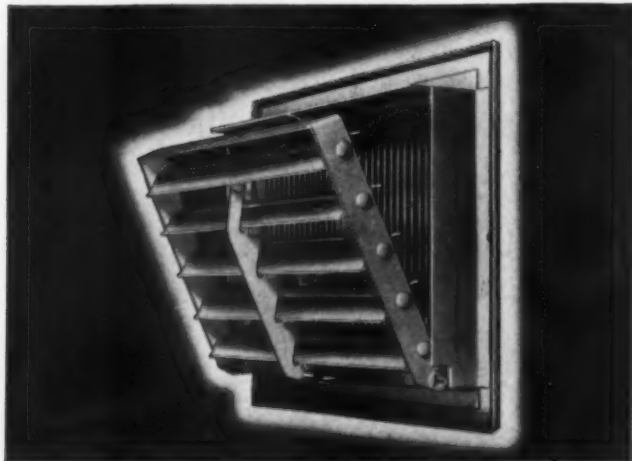
# fluid heat

## OIL BURNER

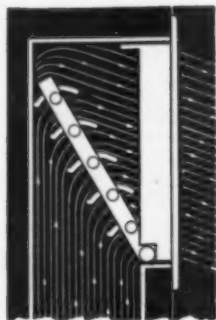
"WORLD'S ECONOMY CHAMPION"

Manufactured by Anchor Post Products, Inc.  
Baltimore 24, Md., Established 1892

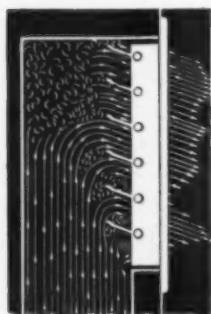
# The BIG difference in A.C. REGISTERS



## is the H & C TURNING BLADE VALVE!



ABOVE  
Airflow obtained with the  
H&C TURNING BLADE  
VALVE.



ABOVE  
Airflow obtained with the  
conventional Multi-Shutter  
Valve.

THE sketches at the left accurately indicate the airflow obtained with the H&C TURNING BLADE VALVE and that obtained with the ordinary multi-shutter valve (in downward position). Note the smooth, evenly divided pattern of the airflow through the TURNING BLADE VALVE and the total absence of turbulence at the top of the stackhead. Resistance, according to impartial tests, is thus reduced as much as 30% — a factor that permits the user of the H&C No. 75 Register to obtain far better air distribution than with any other popularly priced air conditioning register; for the TURNING BLADE VALVE is an exclusive H&C feature that cannot be duplicated. Complete engineering data and details are contained in our No. 48 catalog, available from your jobber.



H&C No. 75 DESIGN  
the only registers available  
with the TURNING BLADE VALVE.



**HART & COOLEY MANUFACTURING CO.**

World's Largest Manufacturers of Registers, Grilles and Furnace Accessories  
**HOLLAND MICHIGAN**

## NEW LITERATURE

Use the Coupon on Page 137

### 218—Atlas Registers and Grilles

A four-page folder shows registers and grilles, attic ventilators, installation frames and louvred panels, with sizes and prices.—*J. B. Smith Co., 3327 "B" St., Philadelphia 34.*

### 219—Steel Bending Brakes

Bulletin 44-H covers the Chicago hand operated steel bending brakes. Eight pages illustrate and describe the Universal box and pan brake, special hand brakes, the portable hand brake and hand folder brake, with specifications. An additional plant has been set up to improve deliveries.—*Dreis & Krump Manufacturing Co., 74th & Loomis Blvd., Chicago 36.*

### 220—Electrode Wall Chart

A 25 by 35 in. electrode wall chart, printed in color, has just been published. This chart shows procedures for every type of arc welding electrode; actual results of too long or too short an arc, too much or too little welding heat, too fast or too slow a welding speed, and then shows a perfect bead as well as a cross section of all welds; and complete illustrated welding symbols for both fusion and resistance welding.—*The Hobart Brothers Company, Troy, Ohio.*

### 221—V-Belt Drive Selection

A new 144-page, indexed catalog for pre-engineered stock Texrope which simplifies drive selection is announced.

Nearly two-thirds of the book is devoted to pre-engineered stock Texrope drives for all applications from one to 150 horsepower. More than 22,000 stock drives are listed in this section. Drives for all horsepower, motor speeds, ratios and driven speeds have been accurately pre-engineered and are systematically listed according to horsepower.

Recently announced new pitch diameter sizes of B and C Magic-Grip sheaves are used in many of these drives and have greatly increased stock drive selection possibilities.

Texrope pre-engineering is the calculation and listing of a stock Texrope drive to meet a certain set of conditions, including horsepower, motor speed, ratio and overload factor. Wherever the same set of conditions exist, the same drive can be used with full assurance that it is properly suited as it would be if individually engineered for each separate application.

The Texrope method of pre-engineering insures that where it is possible to fulfill the requirements of a drive from stock sheaves and belts, the most economical and best drive from an engineering standpoint is listed and can be easily and quickly selected from the new catalog.—*Allis-Chalmers Mfg. Co., P.O. Box 512, Milwaukee 1.*

# Announcing: A NEW

# Flexible Duct Connector

**New engineering material fills long-standing need in heating, piping and air conditioning.**

Bauer & Black Field Engineers announce the development of a new economical, long-life, permanent-seal, flexible duct connector.

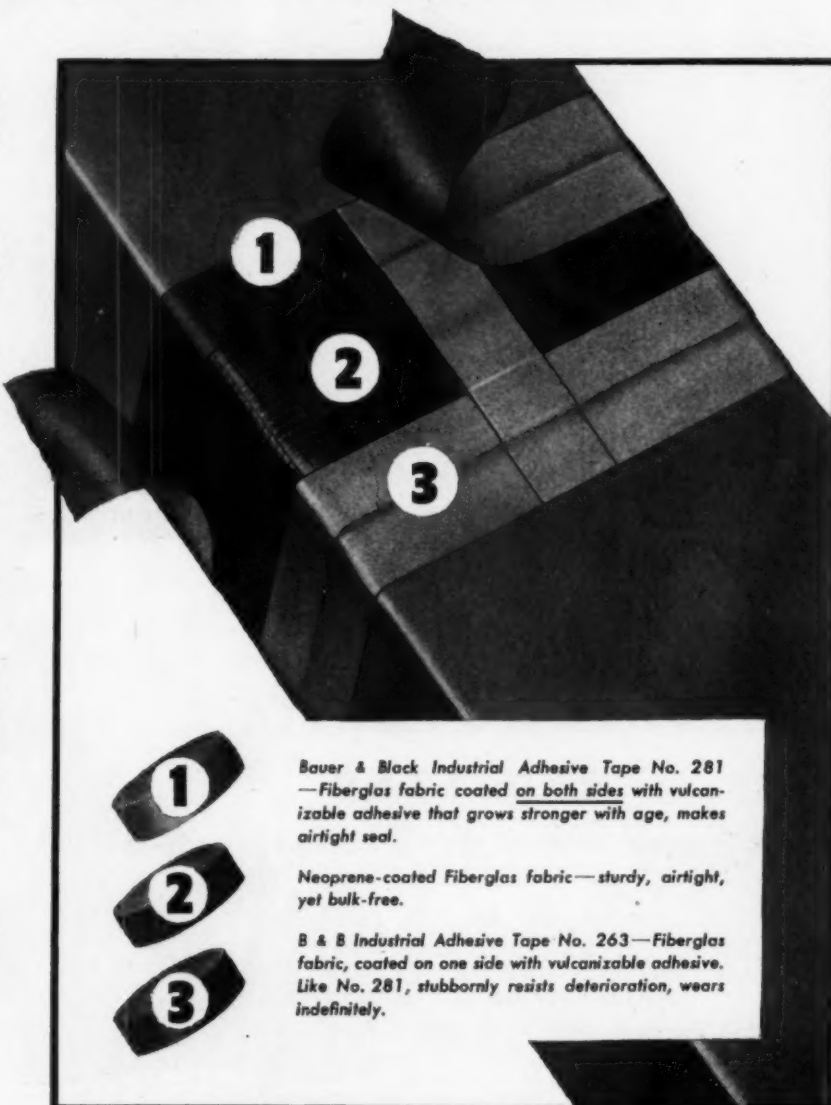
Elements of the new connector are shown in the diagram. Two unique components make the Bauer & Black Industrial Adhesive Tape unusual and practical.

- A.** *Fiberglas\* Cloth—Thin, super-strong, permanent. Resists heat, light, deterioration. Won't shrink or stretch.*
- B.** *Vulcanizable adhesive that grows stronger with age. Sticks with a touch, yet vulcanizes under heat to double its strength!*

As a result, the new connector *improves* with age, instead of deteriorating. It is speedily installed, cutting labor costs drastically. The Fiberglas tapes and the neoprene-coated fabric handle easily, conform readily, seal instantly. And the final appearance is crisp and neat, "tailor-made" for an airtight fit.

#### WRITE FOR DETAILS

Full information on application, source and price will be gladly furnished on request. To see how the new connector can save you time and money, improve your product, address Dept. T8-2 today. No obligation.



**Bauer & Black Industrial Adhesive Tape No. 281**  
—Fiberglas fabric coated on both sides with vulcanizable adhesive that grows stronger with age, makes airtight seal.

**Neoprene-coated Fiberglas fabric**—sturdy, airtight, yet bulk-free.

**B & B Industrial Adhesive Tape No. 263**—Fiberglas fabric, coated on one side with vulcanizable adhesive. Like No. 281, stubbornly resists deterioration, wears indefinitely.

Products of

**BAUER & BLACK**

Division of The Kendall Company • 2500 S. Dearborn St. • Chicago 16

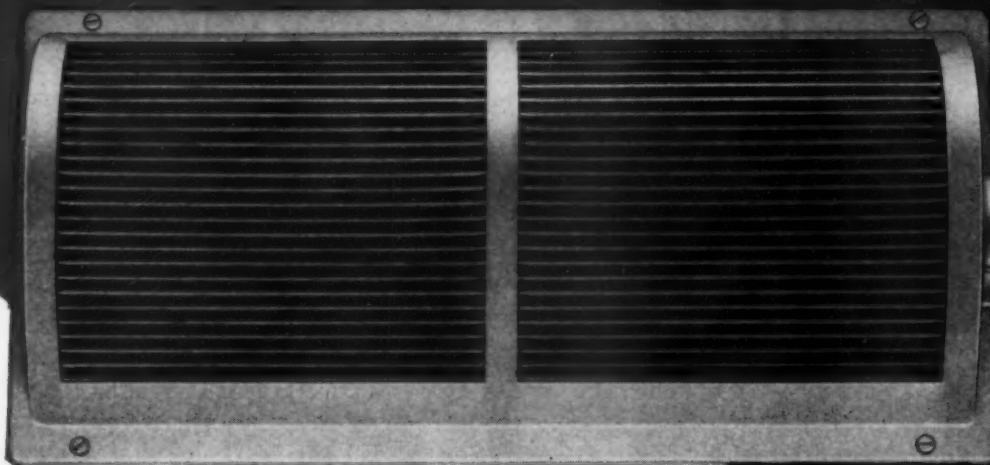
## Industrial Adhesive Tape

PRESSURE SENSITIVE

Production Short Cuts to Reduce Costs • Research to Speed and Improve Methods

# KNOCK-OUT NEWS

THE SENSATION OF THE NEW YORK HEATING SHOW



PATENTS PENDING

TEMPERATURE  
SELECTOR DIAL

*Individual Room Temperature Control—AUTOMATICALLY*

*The New* **DOLE**  
**THERMO-MATIC**  
(REG. U.S. PAT. OFF.)  
**REGISTER**  
*for Forced Warm Air Heating Systems*

**DOLE** manufactures AIR and VACUUM VALVES for heating systems and WATER MIXERS for domestic use

- Operates thermostatically from room air.
- Very sensitive: Modulating effect: Output is regulated to meet heat losses.
- Completely self-contained; no wires to run—no bulbs to locate—very simple to install.
- Simple setting of the thermo-dial assures room temperature control—as desired—corrects many unsatisfactory heating installations: Materially improves any forced warm air system.
- A valve control for every room.

The Dole Valve Company  
1933A, Carroll Avenue  
Chicago 12, Illinois

Please send me facts about the new DOLE  
THERMO-MATIC Register for forced warm  
air heating systems.

NAME \_\_\_\_\_  
FIRM \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

Classification  
☐ Dealer ☐ Jobber ☐ Architect  
☐ Builder ☐

*Post Yourself*

ON THIS NEW DEVELOPMENT

SEND THE  
COUPON  
NOW

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## NEW LITERATURE

Use the Coupon on This Page

### 222—Furnace Pipe and Fittings

Catalog No. 475, 16 pages, shows galvanized stack and fittings, furnace pipe and fittings, register pan and register boxes, return air pipe and fittings, trunk and fittings, trunk line and fittings, side rail and connecting strip, connecting lock strip, with list prices.—*Made-Rite Company, Inc., Newport, Ky.*

### 223—Electric Hammer and Drill

Suggestions on the use and maintenance of the Wodack Do-All combination hammer and drill are available. The Do-All combines two tools—a hammer for drilling and chipping masonry and a drill for metal and wood.—*Wodack Electric Tool Corporation, 4627 W. Huron St., Chicago 44.*

### 224—Viking Sales Stimulator

To assist the dealer and jobber in stimulating sales at a time when business is slowing down in the heating field, a visual selling aid to demonstrate the Viking humidifier has been prepared. An actual humidifier is placed in a four-color display, shaped like a plenum. The display is of sturdy cardboard, 24 in. W x 20 in H x 9 in D, and is for both counter and window use.—*Viking Air Conditioning Corporation, 5600 Walworth Ave., Cleveland.*

### 225—Dealer Helps—Cut-Out Display

A home heater cut-out display, a water heater stand-up piece, an action display of Perfection's Multi-Heat burner with Midget pilot, catalogs, booklets, folders, wall hangers and envelope stuffers are offered.

Another sixtieth anniversary offering is a 20-minute motion picture in color titled "Search." This movie brings the audience into Perfection's new million-dollar engineering research center, spotlighting the painstaking research which goes into every product manufactured. A 40-page brochure will back up the film.—*Perfection Stove Company, 7609 Platt Ave., Cleveland 4.*

American Artisan,  
6 N. Michigan Ave.,  
Chicago 2, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "Equipment Developments" and "New Literature." (Circle numbers in which you are interested):

25	26	27	28	29	30	31
32	33	34	35	36	37	38
39	40	41	42	43	44	45
46	47	48	49	50	51	52
53	54	55	56	57	58	
214	215	216	217	218	219	220
221	222	223	224	225		

Name.....

Company.....

Address.....

Are you manufacturer? ☐ Jobber? ☐ Dealer? ☐



Those big muddy footprints, left by some well-intentioned oil man, are a sure sign this oil-heated home needs VENTALARM Signal.

With VENTALARM Signal installed on a cellar oil storage tank, there is no need for the oil chauffeur to enter the home—or even ring a doorbell. The oil burner installation becomes completely automatic even to fuel delivery!

VENTALARM'S clear whistle (audible through the vent pipe out-of-doors) ceases instantly when the tank is properly filled. No spillage—no overflow—property is protected!

When you install a burner or when your service man makes a service call, there's EXTRA PROFIT in selling the housewife VENTALARM Convenience!



VENTALARM  
Model LA  
for new installations



VENTALARM  
Model LC  
for existing  
installations

AVAILABLE AT YOUR FAVORITE SUPPLY HOUSE.  
Write us for special customer mailing folders.

**VENTALARM**  
TANK FILL SIGNAL

Canadian Licensee — EMPIRE BRASS MFG. CO., LIMITED, London, Ontario

# YOUR TOWN'S A BUSINESS TARGET



A Gilbarco Dealer can draw a bead on all the worthwhile oil heating business in his area! His complete line of Gilbarco equipment scores sales bull's-eyes again and again! Homes, offices, banks, theaters, churches, stores... they're all prospective customers for Gilbarco Dealers!

A COMPLETE LINE  
OF FAMOUS OIL  
HEATING EQUIPMENT! }

- CONVERSION OIL BURNERS
- OIL-FIRED BOILER UNITS
- WARM AIR CONDITIONERS
- INDUSTRIAL OIL BURNERS
- OIL-FIRED GRAVITY FURNACES

If you want SALES and more SALES... if you want a firm position in the highly competitive heating equipment business... join the team that sells the big line of oil heating products with the revolutionary Economy Clutch and a famous brand name... GILBARCO... known the world around!

GILBERT & BARKER MFG. COMPANY • WEST SPRINGFIELD, MASS. • TORONTO, CANADA

You'll never know how good business can be

*Until*

you sell the  
Gilbarco line

IF YOU'RE WEST OF THE APPALACHIANS  
write for full information on the profitable franchises now open.

*Gilbarco*  
WITH THE EXCLUSIVE  
ECONOMY CLUTCH

## WITH THE CONTRACTORS

Contractors are invited to write and tell us about their new shops, new locations, new store fronts, display windows, changes in management, etc.

Pictures will be appreciated and returned, if requested.

Jim Hefner of Ingold Company, Inc., Hickory, N. C., is out of the hospital and back on the job part time.

Sid Bowen of Greenville, South Carolina, has been dismissed from Hopewell, and is now regaining his strength at home. It will be a few more weeks before he is on the job.

Ray Barger of Barger-Ashe Roofing Co., Lenoir, N. C., is fixing to build a new shop next door to the present location.

The Feinberg Roofing Co., formerly of 498 Tenth Avenue, New York City, has announced that it is now located in its new quarters at 448 West Thirty-eighth Street, New York City.

Milton L. Kistler, Kistler's Sheet Metal Works, Mobile, Alabama, writes—in renewing his subscription for three more years—and adds that this will put his subscription about two years over the forty-year mark

that AMERICAN ARTISAN has been coming to him personally. He says he read AMERICAN ARTISAN before that as his father was one of the first subscribers after the start of the publication. He believes he has read AMERICAN ARTISAN for at least fifty years and has received much valuable information out of each issue.

Building permit has been issued for construction of a sheet metal shop at 5080 Alhambra Avenue, Los Angeles, for Fred J. Darmes of 2410 East Fifty-seventh Street, that city. The structure will be 40 x 61 feet in area.

Horace King of Hanover Iron Works, Wilmington, N. C., has converted the old location into a warehouse and moved the office and shop across the street. They have very nice offices.

W. R. Etie, sheet metal contractor located at 1224 Summer Street, Houston, Texas, is using a blotter in his promotion work. The blotter carries an interesting sea and lighthouse view, with type matter to show that his shop handles 10-gauge or lighter sheet metal work, heating, welding (electric, spot, acetylene) and that duct work is their specialty.

G. H. Owens purchased the Shillito Roofing Company, Columbia, S. C., in 1943 from Owens Steel Co., who had purchased the business from the estate of George Shillito. Mr. Owens is the sole owner and the company does all kinds of sheet metal work and has a completely equipped sheet metal shop for handling this work.

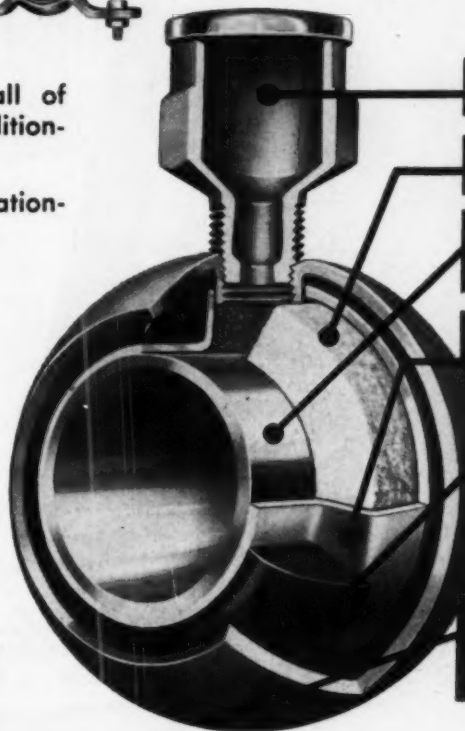
## TRIANGLE PILLOW BLOCK

No other bearing provides all of these advantages for air conditioning equipment:

1. Quiet, shock-absorbing, vibrationless operation.
2. Perfect self-alignment.
3. Self-lubrication over long periods of service.
4. Scientific design for compactness and minimum obstruction to air flow.

Tell us your needs and we will send illustrations of various types of mountings, specifications and complete information.

**TRIANGLE MANUFACTURING CO.**  
392 Division St. Oshkosh, Wis.



Large oil cup keeps wick saturated for years of operation.

Overize felt wick feeds oil to bearing.

Porous bronze bushing feeds lubricant from wick to shaft as needed. Easily replaceable.

Steel retainer sleeve holds bushing, cushion and wick in proper relation.

Thick resilient oilproof cushion supplies a vibration-absorbing element between bearing and housing. Impervious to oil or hardening action.

Pressed steel ball formed around inner assembly holds parts rigidly in position and makes an oil tight seal. Assures perfect alignment through ball-and-socket action.

*Leading the Field*



**MULKEY**

*Manufacturers of*  
Oil and Gas  
Floor Furnaces

•  
Conversion Burners

•  
Oil Trailer Heaters  
and Room Circulators



TRAILER HEATERS

FLOOR FURNACE



*Oil*

**FLOOR FURNACE**

IN THE LONG RUN

EXPERIENCE AND PERFORMANCE COUNT

WHOLESALEERS • DEALERS • BUILDING CONTRACTORS

*Write or wire today for immediate delivery*

**J. F. MULKEY CO.**

12626 WOODROW WILSON • DETROIT, MICHIGAN

23 YEARS OF EXPERIENCE IN DESIGN AND MANUFACTURING

*The attention to detail that marks....*



Cutaway view of Brundage  
Package Unit.

Model PDRM blower assem-  
bly complete with motor.

**CRAFTSMEN**

You'll find none of the sloppy workmanship that characterizes so many products today . . . none of the "that's good enough" attitude . . . here at Brundage. Brundage Blowers and Package Units are made to the same high standards by the same high class craftsmen that have always made Brundage products the fine products of the field. When you want the quality that means longer life and lower operating costs, specify Brundage Blowers and Package Units.

STRADIVARIUS

THE  
**Brundage**  
COMPANY

*Blower Specialists*  
*Since 1919*  
KALAMAZOO 11,  
MICHIGAN

## WITH THE MANUFACTURERS

E. M. POWELL is Middle Atlantic district manager of the Sturtevant Division of Westinghouse, with offices in Philadelphia.

Mr. Powell will direct sales and installation of air handling and air conditioning equipment throughout Delaware, Maryland, Virginia, most of Pennsylvania, and parts of West Virginia and New Jersey.

The Sturtevant Division manufactures complete air handling and air conditioning systems and is the nation's largest producer of forced and induced draft fans for power plants.

The new manager has been with Westinghouse since 1922, when he entered the company's graduate student training program following his graduation from Bliss Electrical School.

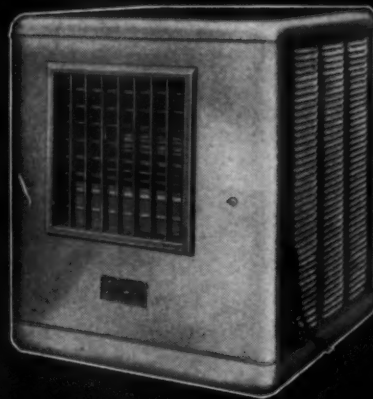
THE ENGINEERING STAFF OF THE BRUNDAGE COMPANY, Kalamazoo blower manufacturer, moved into a new research laboratory at the first of the year. Here, in a building owned by the company near its Kalamazoo plants, products will be developed and improved, and equipment will be tested.



Those seated, left to right: F. W. Brundage, treasurer & assistant general manager; Dillis Heaven, secretary of the meeting; Lou Reining, R. J. Milholland, Paul Simmons, W. A. Rockafeld, vice president & chief engineer; H. J. Kirkendall, H. F. Brundage, president; Harold Winningham, Fred Bishop, Bruce McLouth, Paul Agey, Elbert Moncrief, Joe Babush, Nath Hill, Irving Dane, Howard Perkinson. Those standing, left to right: Harold Austin, chief draftsman; Clifford Becker, comptroller; Glenn Morrison, purchasing agent; J. E. Brundage, secretary & factory manager.

The new laboratory was first opened in December for the occasion of the company's first national sales conference, attended by 13 representatives from coast to coast, and members of the Kalamazoo staff. The event drew representatives from Chicago, Syracuse, Dallas, Pittsburgh, Seattle, Detroit, Minneapolis, Cleveland, Milwaukee, St. Louis, Boston, and New York City.

In 1948 the Brundage Company will be exclusively engaged in manufacturing. When it was organized in 1919, the firm handled construction contracts. The final contracts have just been completed.



## SALES UNLIMITED!

with the 1948

# SNO-BREZE

EVAPORATIVE  
COOLERS

Every residential, business or industrial building represents a potential sale when you stock SNO-BREZE evaporative coolers!

Four brand new models are available for the coming season in a size and type to meet every conceivable cooling requirement. SNO-BREZE . . . by far America's most acceptable cooler line can provide the foundation that will build the largest cooler business you've ever enjoyed!

Dealer aids? Plenty . . . and the kind that will keep SNO-BREZE dealers 'way out front, all season long. PLUS, an aggressive national advertising campaign designed to keep customers coming . . . your cash registers humming!

38 YEARS OF AIR CONDITIONING LEADERSHIP

# Palmer

Write for free literature  
Dept. AA-3

MFG. CORP., Phoenix, Arizona

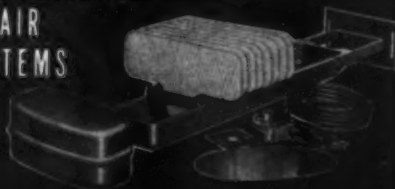
**Be A  
Blower Dealer**



Convert any gravity furnace into a modern forced-air heating plant with the Viking Blower Package. Engineered for quick, easy installation... quick, certain profits for you.

## ANOTHER **Viking** PROFIT BUILDER

SERIES 1100 HUMIDIFIER  
FOR FORCED AIR  
HEATING SYSTEMS



A companion package that makes your conversion job a complete WINTER AIR CONDITIONING SYSTEM. Designed to fit all types of furnaces. Complete data in Bulletin 349.



## **Viking No. 11 KIT**

AUTOMATIC WATER  
PAN FILLER FOR USE  
ON ANY FURNACE

A complete package. Carry one at all times. Quickly, easily installed. Helps make an inspection trip a profitable call.

# **Viking**

**AIR CONDITIONING CORP.** 5600 WALWORTH AVE.  
CLEVELAND 2, OHIO

## WITH THE MANUFACTURERS

HENRY USBORNE, member of British Parliament and head of Nu-Way Heating Plants, Limited, of Birmingham, England, recently visited the Nu-Way Corporation in Rock Island, Illinois. Mr. Usborne's company manufactures Nu-Way oil burners under a license arrangement with the American company.



W. F. Klockau, president of Nu-way; Mr. Usborne and O. K. Gipple, sec.-treas.

He stated that he had set aside two days from a cross-country lecture tour of America to make the visit to the Nu-Way plant. During a trip through the plant he commented on the fact that the quality of English made burners compared favorably with American standards. The big difference between American and English burners of all makes comes in the assembly line methods common in all plants here today. He pointed out that English made burners sell for roughly four times that of the average burner made here in the United States.

HOMER E. McCAMPBELL is now sales manager of the Combustioneer Division of The Steel Products Engineering Co., Springfield, Ohio.

To his new job Mr. McCampbell brings many years of experience in the stoker business, having been with Combustioneer since its inception. During the past several years he has been commercial sales manager.



H. E. McCampbell

Mr. McCampbell will head the entire Sales Department of the Division, which will include Combustioneer Domestic and Commercial Stokers, Humidifiers and other items that may be added to the Combustioneer line as they are developed.

## WITH THE MANUFACTURERS

FURTHER EXPANSION OF the Kaiser Aluminum sales program was announced by The Permanente Metals Corporation with the appointment of 23 distributors throughout the United States.



R. G. Welch

In announcing the expansion, General Sales Manager Bert Inch pointed out that the establishment of the distributor sales system will assure less-than-carload buyers, including the "little man"—the manufacturer of ashtrays, for instance, who buys in lots of 25 to 100 pounds—a ready source of supply of new utility, roofing and specification sheet.

Robert G. Welch, who has had wide experience within the Kaiser organization, will manage the new Kaiser Aluminum distributor sales, Inch revealed.

TIM J. McCauley has become assistant general sales manager for the Heating and Appliance Division of Evans Products Co., Plymouth, Mich.

A former Army Air Forces major, McCauley was Director of the Veterans Administration flight training program in the state of Michigan prior to joining Evans.

H. MELVIN CARNAHAN, assistant manager of the Pittsburgh sales office of the American Radiator & Standard Sanitary Corporation, was promoted to manager following the retirement, on the company's retirement plan, of E. H. Eggleston, who held the position in American-Standard and its predecessor companies since 1910.



H. M. Carnahan

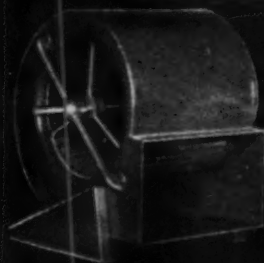
Mr. Carnahan has been in American-Standard's sales department for the past 12 years. He was born in Springdale, Pa., and was graduated from the University of Pittsburgh in 1935. For several months he was employed by a paint manufacturing concern in Philadelphia, and in December, 1935 he joined the Standard Sanitary Manufacturing Company. After preliminary training he was assigned to the Chicago office, where he did promotion and sales work. In 1937, he was transferred to the Baltimore sales office.

After army service he returned to American-Standard's Chicago office as assistant manager. In June, 1947, he was transferred to Pittsburgh as assistant manager. Mr. Carnahan is a member of the Pittsburgh Chamber of Commerce.

# MANUFACTURERS!

## Viking

### EFFICIENCY

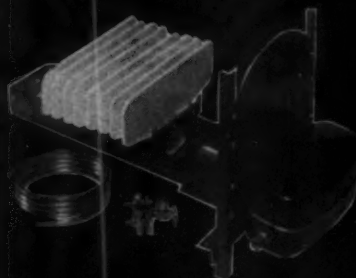


Puts Quality  
in Your Furnace

Viking Blower assemblies are recognized by the entire industry as the most efficient, trouble-free unit ever developed. And, the complete unit costs less than one you, as a furnace manufacturer could build or assemble yourself.

## Viking Dependable Humidifiers

### Add Winter Air Conditioning to Your Furnace



SERIES 1300  
FOR POPULAR  
SIZED FURNACES

A complete float operated humidifier especially designed for small plenum installations. Incorporates the famous Viking Top Seat float valve for longer, trouble-free service under all conditions. Bulletin 349 contains complete data.

Write Today for

## Viking

### BLOWER CATALOG

Contains complete specifications on blower units for any size furnace at any capacity.



# Viking

AIR CONDITIONING CORP. 5600 WALWORTH AVE.  
CLEVELAND 2, OHIO

## Minnesota Convention

(from page 115)

applicant if employment is refused for lack of union affiliation.

Mr. Barker was queried from the floor whether it is lawful for a building trades union to refuse to work on a job where there is a dispute. Mr. Barker answered that it is unlawful.

### Labor Relations and Taxes

Roy Dose presented a detailed and complete discussion about the activities of the Labor Relations Committee. The Taft-Hartley Act has created many new problems to the industry, and this committee is charged with the responsibility of acting as a spokesman for the industry in its labor relations.

Frank Tusler, CPA, Tusler, Eng and Company, Minneapolis, speaking on tax and accounting problems, said the best way to avoid unnecessary tax assessments is to take care of all records properly and promptly. This is best taken care of by entering all details of transactions at the time, instead of waiting until the end of the year and depending on memory.

### Apprenticeship

Saturday morning's session, under the gavel of H. R. Bostrom, of St. Paul, Chairman of the Apprenticeship Committee, was marked by the serious effort this com-

mittee is making to provide new sheet metal craftsmen as times takes it toll in the ranks.

Mr. Bostrom supported himself with an authoritative panel of vocational experts: H. J. Pierson of Dunwoody Institute, Minneapolis; E. P. Hodoba of Local 34 SMWIA; F. G. Musala, Division of Apprenticeship, Department of Labor and Industry, State of Minnesota; and H. W. Teichrow, of St. Paul Vocational School.

Discussion brought out that too few young men realize the employment possibilities in sheet metal and the fascination of the trade. Experience has shown that those who do become interested, become *intensely* interested in the craft.

Mr. Musala, speaking on the State program for apprentices, said the 10,000th registrant under the Minnesota Apprentice Standards recently completed training. He observed that both the first and the 10,000th to complete the course were sheet metal workers.

After reports by standing committees and election of officers for 1948, the convention adjourned.

### Jack E. McDonnell

Jack E. McDonnell, sales manager and vice president of McDonnell & Miller, Chicago, and younger brother of E. N. McDonnell, head of the company, died Tuesday, January 27. His death was sudden and unexpected even though it followed a period of some weeks in the hospital. Burial was at Ottumwa, Iowa.

## a PEERLESS furnace for every need!

The five PEERLESS furnaces shown here comprise the most advanced line of warm air furnaces ever offered for the home market. Refinements in design and construction give you many advantages with which to outsell competition—and there is a PEERLESS furnace to meet every customer's requirements.

THE SENSATION is a deluxe steel furnace for stoker or hand firing; large blower, automatic humidifier. THE MASTER is an auto-

matic furnace for oil or gas. THE HIGH BOY (illustrated with case removed) is ideal where space is limited; blower forces maximum heat to registers. THE STEEL ROUND-CASE furnace is a favorite for either stoker or hand firing. THE COMBINATION furnace heats economically with either oil or coal.

Write or wire today for complete description of this popular and profitable PEERLESS line.



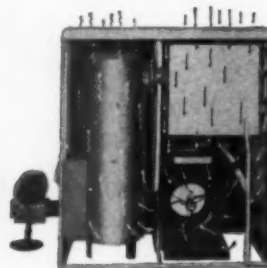
HIGH BOY



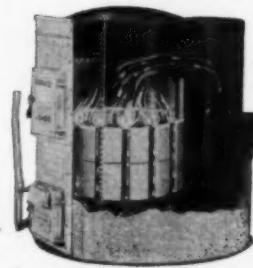
THE SENSATION



THE COMBINATION



THE MASTER



THE STEEL ROUND-CASE

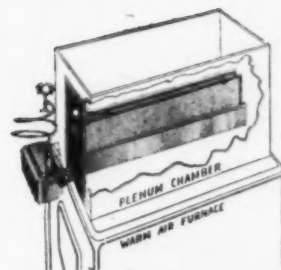
# THE PEERLESS FOUNDRY COMPANY

1855 LUDLOW AVENUE  
INDIANAPOLIS 7, IND.

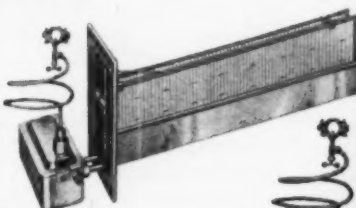
# FOR VITALIZED HEAT USE *Convector* HUMIDIFIERS

- ★ When you sell humidity, sell Maid-O'-Mist which gives your customers MORE humidity per \$ cost!
- ★ One of the finest AUTOMATIC humidifiers available is this Maid-O'-Mist Convector . . . product of advanced engineering and precision manufacture—modern as tomorrow's newspaper.
- ★ From the standpoints of price, satisfactory performance, ease of installation, and long service, it's miles ahead.
- ★ Learn the facts, and you'll be fully as enthusiastic as we are about the tremendous profit possibilities of this unique and entirely different product.

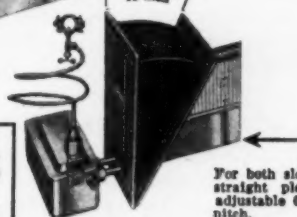
**AUTOMATIC  
FAST-ACTING  
HIGHLY EFFICIENT  
EASY TO INSTALL.  
EASY TO SERVICE!**



Showing proper installation of a 2-Trough "CONVECTOR" Humidifier on an Air Conditioning unit . . . straight-side mounting.



For straight-side plenum chamber installation only.



For both sloping and straight plenums—adjustable 0° to 30° pitch.

## FEATURES

- 1 Evaporates MORE water with minimum of air flow restriction.
- 2 Water reservoir located away from heat of the furnace.
- 3 Non back-siphoning water feed valve fully approved by National Plumbing Laboratory.
- 4 Furnished complete with 6' of copper tubing, saddle valve, fittings, and installation instructions.

## Come to HUMIDITY HEADQUARTERS

Maid-O'-Mist manufactures a complete line of humidifiers, humidifier valves and accessories. It pays to handle all of this high-grade, yet low-priced equipment. Write us, or see your jobber!

**MAID-O'-MIST INC.**  
3213 N. PULASKI RD.  
CHICAGO 41, ILLINOIS



## Extra Profits In Blower Installations

with

# Vent-Air

General Purpose  
**CAST ALUMINUM  
UTILITY BLOWERS**

- V-5—6" (less motor) - - - \$19.00 Net  
V-10—7" (less motor) - - - 24.00 Net  
V-20—9" (less motor) - - - 36.00 Net

SIZE	INLET	OUTLET	WHEEL DIA.	CFM	REC RPM	REC HP
V-5	6"	6"	6 1/4"	550	1750	1/4
V-10	7"	7"	7 1/4"	1180	1750	1/2
V-20	9"	9"	9 1/4"	2280	1750	3/4 or 1

Blowers are of light weight, sturdy, cast aluminum—non-sparking. Standard diameter inlet and outlet—fit stock size pipe. Adjustable base—fits any standard motor. Adjustable discharge—rotates to four positions. Wheel statically balanced.

We Can Supply Motors for Each Unit, If Desired

**MAXIMUM AIR DELIVERY • MINIMUM OVERALL SIZE AND WEIGHT**



**MOTOR NOT INCLUDED**

Installed with used or new motors—VENT-AIR provides a compact, efficient blower set that permits you to make a good profit for your time and trouble. Order a VENT-AIR today. Send purchase order or cash. Shipped F.O.B. Detroit.

*Fried Air-Kool Co.*

**8205 LYNDON  
DETROIT 21, MICH.**

## Kruckman

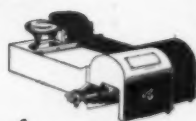
(from page 71)

to companies whose manufacturing requirements have changed. It records that the historical quota system of steel distribution has not operated satisfactorily, either with regard to old customers, or with consideration for new customers, or changing factors of manufacture. It requests the Federal Trade Commission to investigate and report: the withdrawal of steel companies from established distribution in certain areas; the acquisition of steel facilities by other steel companies and the removal of the purchased facility from normal trade in the area served; the acquisition of steel-producing facilities by larger steel-using companies to assure complete production for their own use; a complete record of sales of steel products by steel companies to their integrated operations, and a comparison of such sales with those to independent companies, at all levels of operation, together with a finding as to the effects upon independent users and producers resulting from integrated operations. The Committee asks extension of export controls, particularly in the interest of smaller business. It suggests that the agencies with authority to administer export controls be required to consult with representatives of industry in the development of export programs, in order to be fully informed at all times of the impact of exports of steel upon the domestic economy. The Committee demands that Government do everything in its power to develop immediate sources of scrap. It opposes reimposition of wartime Government allocations and

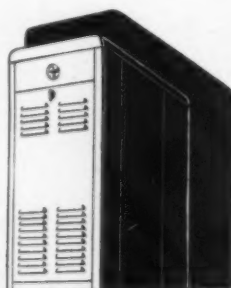
priorities upon the steel industry. It opposes absolutely the export of scrap to foreign nations, or the export of unfinished steel.

### Lobbies Looked Into

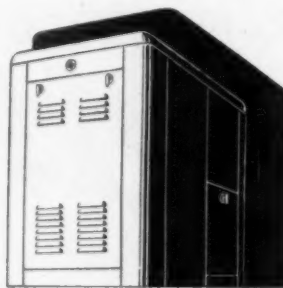
Meanwhile, other significant actions have been initiated by other agencies of the Government. For example, the Department of Justice recently has been closely investigating certain alleged practices of lobbyists on the Hill. It appears that there are evidences of the expenditure of unusually large sums of money. The impression seems to be that the money was spent by properly registered lobbyists as well as those who are not registered. The word is that most of this spending has originated with the great trade associations which each represent specifically one basic primary industry. It should be understood that the organizations, such as the usual commercial associations, chambers of commerce, boards of trade, and similar units, are not under fire. The investigation is particularly focussed upon those which apparently have members who contribute more than \$500 per person or company or corporation. It is the law that the identity of such subscribers must be reported. Apparently some of the great primary-industry trade associations are suspected of having omitted to file such information. The rumored lobbying activities on the Hill obviously impelled some members of the Congress to make enquiries. Out of this grew the investigation, which may develop into a subject of major comment, and possible action, by Congress.



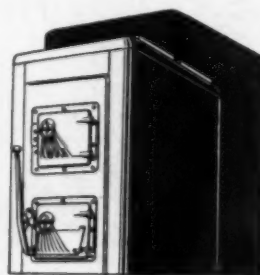
**Certified**  
**HEATING**  
**EQUIPMENT**  
IS YOUR  
BEST SOLUTION  
TO THE RESTRICTED  
FUEL PROBLEM



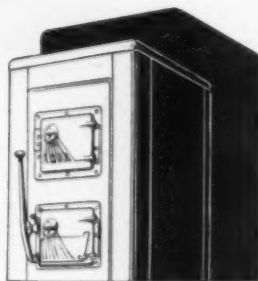
Certified gas fired  
forced air furnace



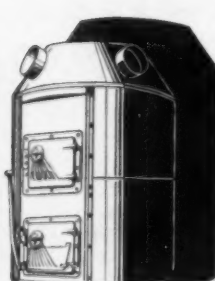
Certified oil fired  
forced air furnace



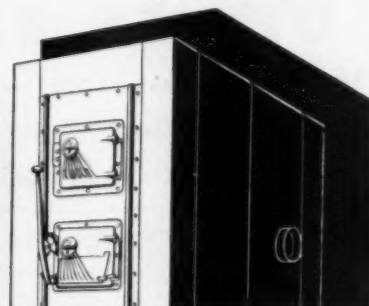
Certified coal fired  
forced air furnace



Certified coal fired  
gravity furnace, square



Certified coal fired  
gravity furnace, round



Certified coal fired  
Mammoth furnace

The easy conversion of Certified Furnaces from one fuel to another helps solve today's uncertain restricted fuel problem. A Certified Furnace takes care of your customer's comfort now, and later . . . permanent satisfaction. Certified Furnaces are right . . . right for immediate use in any locality . . . right for tomorrow's changing conditions.

**CERTIFIED FURNACE CO.**

DIVISION OF STAINLESS & STEEL PRODUCTS COMPANY

1000 BERRY AVE.

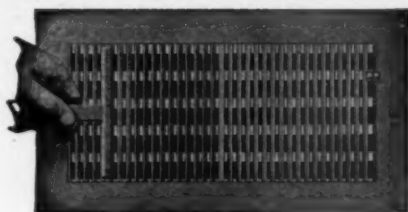
ST. PAUL 4, MINN.

# Independent

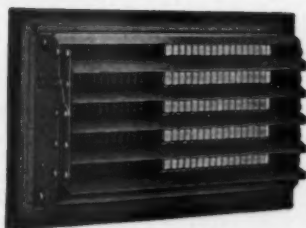
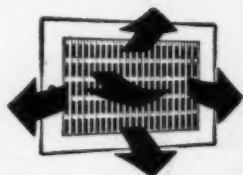
WROUGHT STEEL REGISTERS

PROVIDE

4 WAY ADJUSTABLE AIR FLOW



Design No. 238



Right . . . left . . . up . . . down . . . air flow at any angle desired, in addition to straight outward . . . plus the durable construction which has distinguished Independent products for more than 46 years . . .

238 Independent Wall Register. Vertical grille bars are manufactured at an angle of 30 degrees, one-half to the right and one-half to the left. They may be bent to direct air flow at any other right or left angle or straight outward. Horizontal multiple valves located at the back of register can be set to deflect air flow up, down, or straight outward. Available in standard sizes 8"x6" to 30"x8".



Send for Catalog 41-AC  
Always Leading—Always Progressing

THE INDEPENDENT  
REGISTER CO.

3747 E. 93rd STREET • CLEVELAND, OHIO

Mr. Dealer!

HERE'S SOMETHING  
YOU CAN SELL...NOW

The RAYTHEON  
HOME Precipitator  
CLEANS AIR ELECTRONICALLY

Alert dealers are now cashing in on this fast-selling home appliance. The Raytheon Home Precipitator is new . . . it's available . . . it has a tremendous year round market. Every warm air heating and/or air conditioning user — old or new — is a prospect.

### START CLEANING UP—TWO WAYS

Get your share of this substantial volume and profit. Start featuring this amazing new electronic air cleaner. Show your customers how they can have a cleaner, healthier, more comfortable home atmosphere . . . dust-free, pollen-free, smoke-free air . . . extra leisure, lower cleaning costs — all for about 6 cents per day. The Raytheon Home Precipitator packs a potent sales story — easily demonstrated. Don't overlook this brand new opportunity. Act now . . . today.

### NOW . . . DOUBLE OPPORTUNITY

Build additional sales with the newest Raytheon Precipitator—a brand new CLEANING AND CIRCULATING UNIT for light dirt concentration commercial applications. Priced right for rapid sales to restaurants, bars, night clubs, offices, etc.

CALL YOUR DISTRIBUTOR FOR  
COMPLETE INFORMATION

RAYTHEON MANUFACTURING COMPANY  
Commercial Products Division • Waltham 54, Mass.  
Waltham 5-5860



#### ATLANTA

Raytheon Manufacturing Co.  
306 Candler Building  
Lamar 6791

#### CHICAGO

Raytheon Manufacturing Co.  
222 W. Adams St.  
Rm. 7457

#### CLEVELAND

Raytheon Manufacturing Co.  
902 Hanna Building  
Main 3730

#### DETROIT

Raytheon Manufacturing Co.  
6432 East Avenue  
Madison 6300

#### NEW YORK

Raytheon Manufacturing Co.  
60 East 42nd St.  
Murray Hill 2-7440

#### WASHINGTON, D. C.

Raytheon Manufacturing Co.  
739 Munsey Bldg.  
Republic 5897



Excellence in Electronics

The noted writer and economist, Henry J. Taylor, after returning from a 5,000 mile automobile trip, probing around Europe, in England, France, Italy, Greece, Switzerland, Belgium, Holland, and Germany, added to the record in this discussion, recently, by his testimony before a Senate Committee. He pointed out "the real trouble with our aid program is that we are fooling ourselves about what happens to our substance after it gets overseas. The cost of additional foreign aid is frequently described to us as 2 or 3 per cent of our national production. This, I am sorry to say, is a misleading presentation of the facts. It draws our attention away from the shortages involved. By relying on an average of the national production it omits the fact that there are great differences in the depths of the shortages. Is the demand for steel 2 or 3 per cent of our national production? Oh no, my friends. We have sometimes been told it is 10 percent; at other times we are told it is 15%. I can tell you that at least 50% of the steel sent from this country to Europe is used to build ships. Does that appear to be steel used for things desperately needed for relief?

"Is the demand from Over There for freight cars—2 or 3 per cent of our production? Well, hardly.

"The demand for wheat is 30 per cent of our annual production. What is that 2 or 3 per cent anyway?

"It reminds me of the story of the man who was drowned crossing a stream that averaged 2 feet deep.

"So far, only four years are included in the plan, and only part of Western Europe. The bill: \$17,000,000,000 to be paid by every man and woman who works in America. Other bills that would be set by this pattern:

- (1) Asia; (2) Latin America; (3) The Middle East; and (4) Indonesia, are yet to be heard from.

"Sooner or later we must figure the cost in terms of the basic stability of our own economy here at home.

"We American people have already contributed to postwar relief at the rate of \$553 per family. Under present official proposals for increased relief abroad the U. S. family bill would be built up to \$1,000 per American family by 1952.

"The latest draft legislation proposing aid to Europe means nearly \$7,000,000,000 of taxes in 1948 on all of us over and above what we would otherwise pay.

"Our country is being taxed *now* by local, State and Federal Governments at the rate of a billion dollars a week—\$52,000,000,000 in taxes collected last year. Taxes now cost about 30 per cent of the national income and if there is anything more dangerous than that—I don't know what is is."

---

**Patton**

(Continued from page 74)

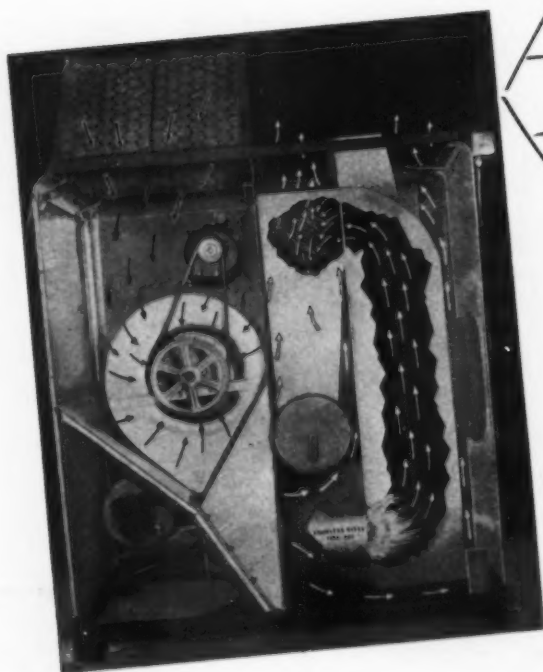
standing. A program is then set up that will assist the debtor with his problem.

This program provides for liquidation of his debts in full over an extended period of time, through regular payments made from income. In many instances this is done by arranging to have pay checks mailed to the debtor in care of the adjustment company to insure continuous supervision of the debtor's income and budget. The amount of money to be set aside for debt

## COMPLETE CUSTOMER SATISFACTION!

*when you install* **TJERNLUND QUICK HEAT**

### PERFECTED WINTER AIR CONDITIONING



## HERE'S THE INSIDE STORY!

Satisfied customers build sales. It's particularly true in this field where purchases may run into hundreds of dollars and poorly installed jobs or unreliable equipment can prove costly to your reputation and subsequent business opportunities.

Take a look at this cutaway view of Quick-Heat—it shows a modern, highly efficient heating plant in operation. The air is drawn through the filters and forced around the entire heating unit including the "counter-flow" heat extracting flues. This results in complete air wipeage of all heating surfaces and clean, comfortable heat for many years.

The Tjernlund line will meet your needs for any installation . . . investigate today. We make them to satisfy.

## TJERNLUND MANUFACTURING CO.

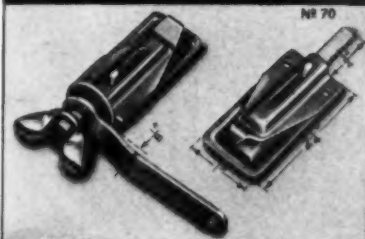
2140 Kasota Ave.,

St. Paul 8, Minn.



## Kwik-way DAMPER REGULATOR SETS

NOW AVAILABLE FOR PROMPT DELIVERY



ONE

**SOLID HAMMER Blow**  
**SETS THE BEARING**  
*Permanently Secure and*  
**Rattle Proof** (NO ANVIL REQUIRED)

Unquestionably, the most easily and quickly attachable damper regulator on the market.

To attach bearing to damper: Simply slip the bearing over the edge of the damper at the bearing line. Lay on any firm surface and strike one solid hammer blow. The prong pierces the damper and is clinched securely in place by the heavily ribbed underside construction of bearing. Fastening is permanently solid, rattle-proof.

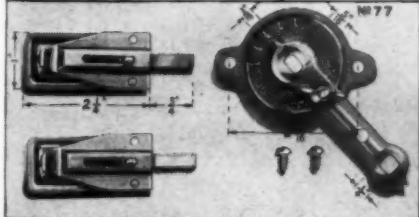
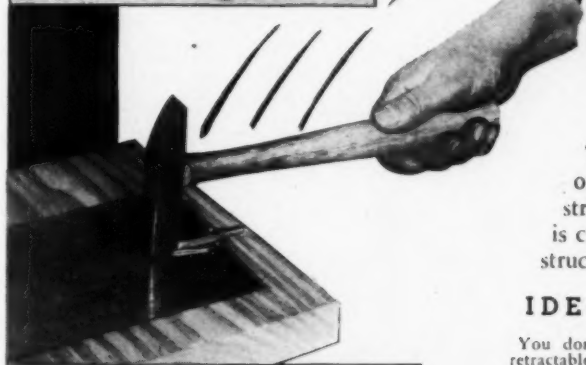
### IDENTICAL 5/16" RETRACTABLE BEARINGS

You don't have to fuss with pairs. And, since your dampers with these bearings have retractable bearing bolts on BOTH sides, installation of regular or splitter dampers in both round and square ducts is quicker and easier.

#### LIST PRICES

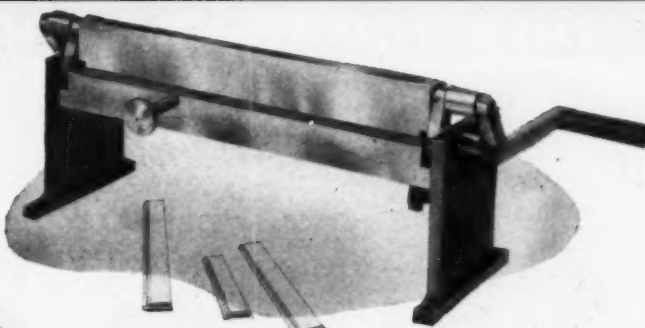
No. 70 Set . . . . .	\$0.30	No. 77 Set . . . . .	\$0.40
FOR LARGE DAMPERS			
No. 50 1/2 Set . . . . .	\$0.60	No. 80 1/2 Set . . . . .	\$0.60

See your jobber or write for literature



**HART & COOLEY MANUFACTURING CO.**  
HOLLAND · MICHIGAN

**YOU'VE BEEN WAITING**  
**for THIS!**



Pat. Applied For

Announces

**Riverside**  
**The "S" Clipper**

**Over-and-Back-ONCE! — and You've Got a Perfect "S" Clip**

And that's the main story except that it is a simple, sturdy machine that will last for years with practically no upkeep. An average operator can easily turn out 4 to 5 hundred clips per hour. You can't afford to be without it.

Better write for full information today

SHAKOPEE

**RIVERSIDE MACHINERY CO.**

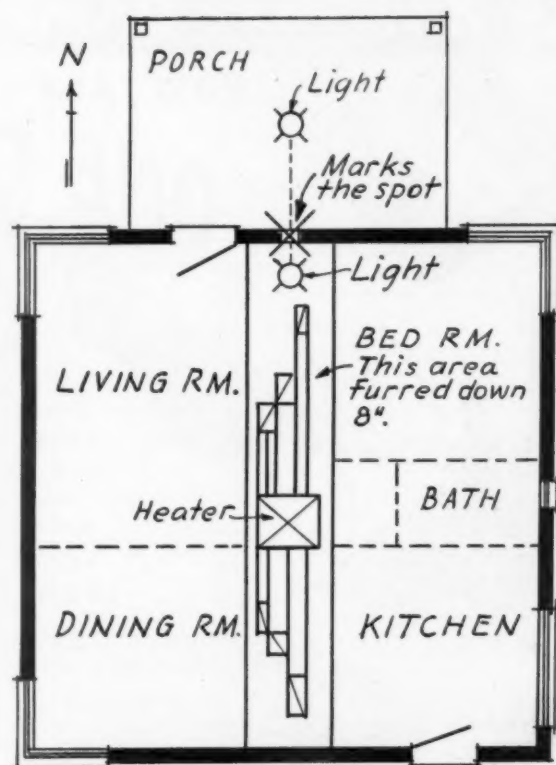
MINNESOTA

## Open For Discussion

(from page 90)

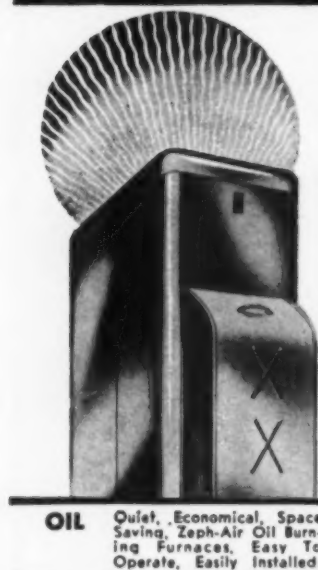
ANSWER: The solution of this was very simple, as is the case in 99 out of 100 of these crimes. The contractor had sized his ducts and openings properly; the heater was of relatively good design. The building was well constructed, but the electrician, in taking a piece of  $\frac{1}{2}$ " BX through the front wall into the opening above the ceiling of the porch, had knocked a two-inch hole in the brick through which the zero air poured into the furred space, cooling all the ducts on the north side of the building. The thermostat was located in a room coming off of the south side ducts and it was perfectly comfortable when the rest of the house was freezing. However, the second floor rooms not being heated properly poured very cold air down to the first floor, leaving a cold layer of air always on the first floor of the home.

The correction of this problem required merely the stuffing of a handful of insulation and packing it well around the conduit. This was not a case of knowing engineering. It was merely approaching a problem with no preconceived idea of what is wrong. Do not overlook any clues and assemble them all in their proper place and analyze them with a little common sense. Don't start out with an idea of what you think is wrong and fit all clues to your ideas and discard any clues that don't fit, because the ones that don't fit are the important ones. Never, never think that the home owner is just a crank because if the heating is anywhere near right the owner will be happy.



FIRST FLOOR CEILING PLAN

## WHEN YOU THINK OF HEATING EQUIPMENT —



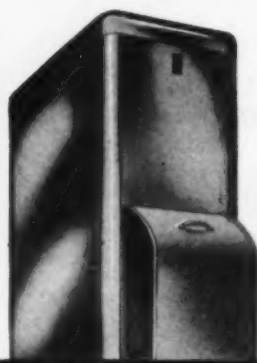
**OIL**

Quiet, Economical, Space Saving, Zeph-Air Oil Burning Furnaces, Easy To Operate, Easily Installed.

Remember  
XX CENTURY

# ZEPH-AIR

With It's 54 Years of Engineered Efficiency in The Heating Field



**GAS**

Completely Automatic Air Conditioned Gas Furnaces With The Famous Gear Shaped Cast Iron Radiation Surfaces.



**COAL**

You Buy Quality In Zeph-Air Coal Furnaces. No Costly Service Calls To Worry About.

It Pays To Push Zeph-Air Heating Products — Thousands of Satisfied Users All Over The Country Remember The Dependability And Reliability Their Zeph-Air Furnaces Stand For.

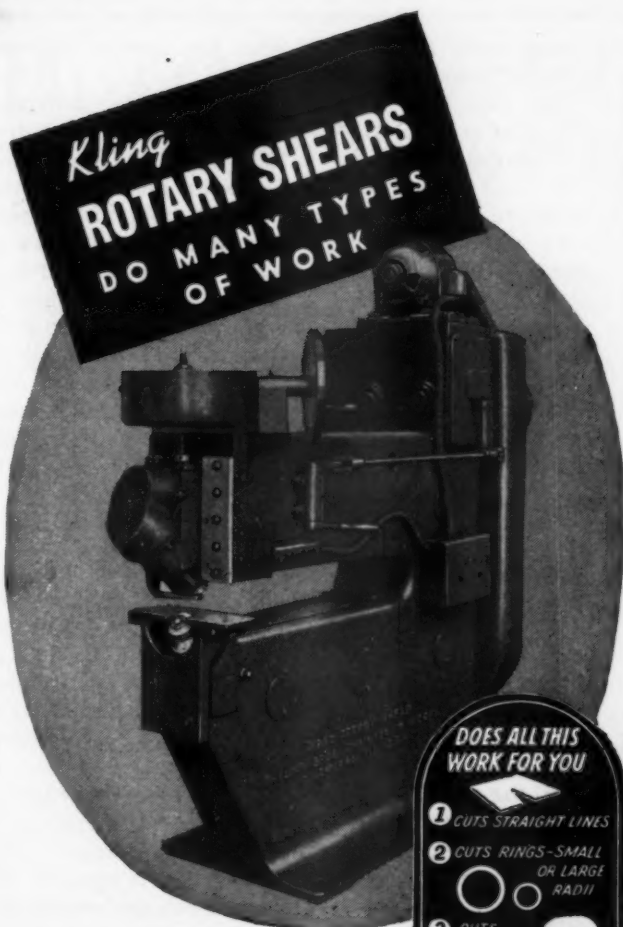
When a Zeph-Air Furnace Has Ended Its Long-Life and Is Ready To Be Replaced — The Customer is Almost Sure To Say — "Years of Uninterrupted Service," "Install Another Zeph-Air."

Cash In On This 54 Years of Customer Satisfaction — Stock Up On Zeph-Air Heating and Weather Conditioning Equipment — Now.

## THE XXTH CENTURY HEATING & VENTILATING CO.

96 IRA AVENUE

AKRON, OHIO



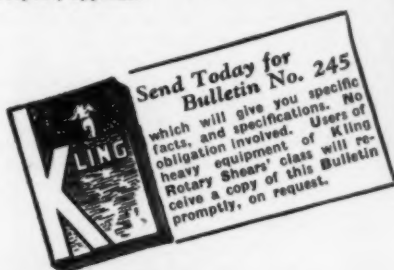
## Yes, and With Hairline Precision

Rapid operation . . . Hairline Accuracy . . . the use of Kling Rotary Shears marks the latest development in cutting mild steel, and sheet metal, up to 1-inch with amazing savings in time, labor, and production costs.

For exacting projects (see illustration at the right), no single unit of metal-working equipment does so many different things so cleanly and efficiently as does the Kling Rotary, pictured above.

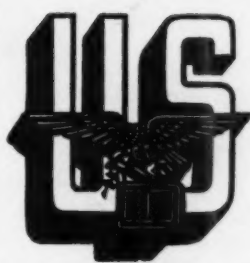
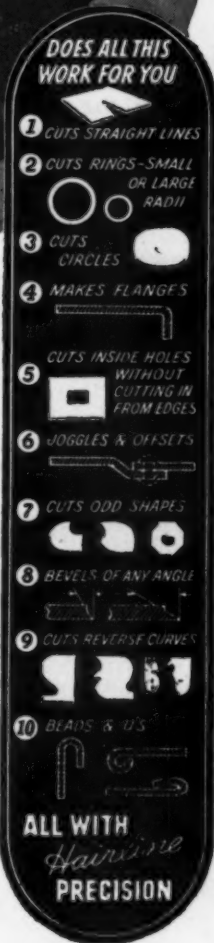
In metal-working plants, automotive, aviation, home appliance, and other industries, where work of this character is being done,—this machine is held in high regard for its versatility and economy of operation.

This great usefulness is the result of half-a-hundred years of engineering experience which prospective buyers, with reason and respect, applaud.



## KLING BROS. Engineering Works

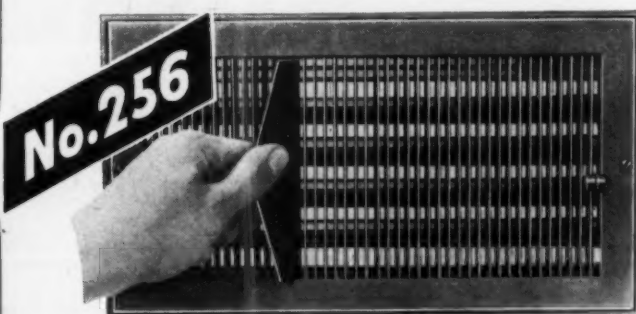
1322-HV No. Kostner Ave., Chicago 51, Illinois  
EXPORT DEPT. 1111 South Ferry Building, New York 4, N. Y.



## MORE PROFIT

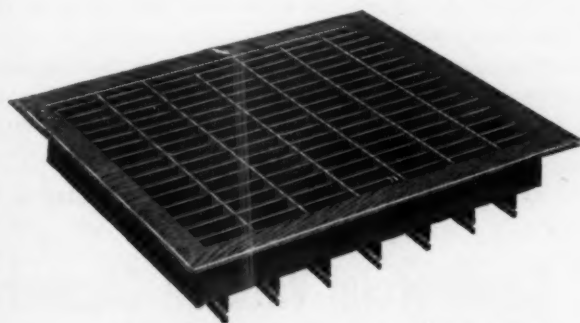
## With ONE Source for ALL Your Register Requirements

Cleaner inventories, no mixed-up stocks, less bookkeeping, less freight—All enter into your profit picture when you buy from ONE source. Making U.S. your supplier gives you ALL types of registers for Gravity and Air-Conditioning of the Finest and Latest Styles. Costs less and assures you of unquestioned acceptance and preference.



### No. 256 4-Way FLOW A-C REGISTERS

These are the finest of Air-Conditioning Registers. Can be used in any location, handling air flow from Below—from Above—from the Rear—from the Right—and from the Left. Multiple valves—plus easily-set grille bars—give you complete 4-way air flow control.



### No. 400 TRUSSTEEL FLOOR REGISTERS

No. 400 Floor Registers (with 405 Trussteel Faces to match) valves run the Short way, for easier operation and cleaner walls. This was a daring feature originated by U. S. and now followed by other manufacturers. Maximum strength and capacity. Heel-proof grille. Smooth SEAMLESS CORNERS for easier installation.

Send for Latest Catalog and Price List.

## UNITED STATES REGISTER CO.

BATTLE CREEK, MICHIGAN  
MINNEAPOLIS • KANSAS CITY • ALBANY



## Clean furnaces quickly— easily—thoroughly!

Check the advantages of the General Electric Furnace  
and Boiler Cleaner

- The new General Electric Furnace Cleaner can do a thoroughly efficient job on any furnace.

This timesaving furnace cleaner has a powerful suction action that quickly removes soot and scale from furnace interiors. It's so fast, so efficient that you can clean many furnaces a day. That means more profits for you!

It's simply constructed, light in weight. One man can operate it with *no previous training*.

General Electric backs this machine with the company warranty, and provides all special tools and accessories. For further details, mail coupon below. General Electric Company, Bridgeport 2, Connecticut.

**FAST • EFFICIENT • QUIET • ECONOMICAL**

*The New General Electric*

### Commercial Vacuum Cleaner

**GENERAL  ELECTRIC**

A & M Department, Section 131, General Electric Company,  
Bridgeport 2, Conn.

Send descriptive literature concerning

- ( ) Wet and Dry Pickup Vacuum Cleaner  
( ) Furnace and Boiler Cleaner

Name .....

Firm .....

Address .....

City ..... State .....

(Continued from page 148)

amortization is computed upon the income and distributed regularly.

Our experience shows that the average individual debt load is about \$1000 and the average time required for complete liquidation is 15 months. While the debts are being liquidated on a schedule approved by his creditors, the worker is protected from interference with his job or attachment of his wages. In view of the fact that our company alone has secured full payment of nearly three-quarters of a million dollars in delinquent accounts annually over a long period of years, most creditors are willing to extend all reasonable cooperation with the debt adjustment plan. The amortization program is controlled to expedite complete liquidation of all debts, but occasionally the size of payments for debt reduction is raised or lowered in keeping with changed circumstances.

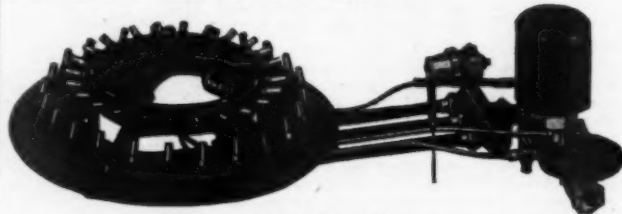
### Results Are Startling

Under the debt adjustment plan, the debtor is immediately transformed from a harried, worried, inefficient and unsafe worker into a secure, confident and capable employee. He has shaken off his load of discouragement and has made a start towards ridding himself of his burden of debt. The transformation at the very start seems almost miraculous to employers who watch it take place for the first time.

As the months go by, the feeling of security increases, the debt load grows smaller and smaller, good budget management habits become ingrained in the worker, and a desire for thrifty saving is instilled. By the time the obligations are wiped out, the worker has

## BARBER BURNERS

For Better Conversion Jobs—



No. 324-B Barber Burner

Barber gas conversion burners automatically or manually controlled, are tailor-made in proper sizes and capacities to fit the heating requirements of all types and sizes of round or oblong furnaces and boilers. They operate with maximum economy and efficiency, both from the heating equipment and the gas fuel, no matter what type. Barber design is widely preferred for its superiority over many competitive, *experimental* burners, because of its basically better combustion principle. If the owner already has automatic controls, these usually can be used with a Barber installation. The burner is the *heart* of the appliance. See that your conversion jobs are equipped with genuine Barber burners.

Listed in A.G.A. Directory of Approved Appliances.  
Ask for catalog and prices on conversion burners,  
appliance burners, and pressure regulators.

**THE BARBER GAS BURNER CO.**

3704 Superior Avenue

Cleveland 14, Ohio

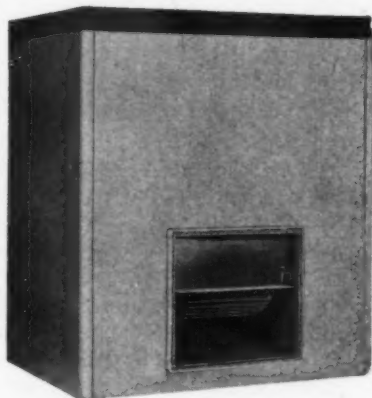
**BARBER *Automatic* JET GAS BURNERS**

For Furnaces, Boilers and Appliances

# This Proven Friend of FUEL CONSERVATION Can Bring You Quick, Sure Profits NOW!



## BLOWER FILTER UNIT



The EJR Series REX AIRPAK illustrated above embodies many improvements in design and construction that not only permit low-cost installation, but insure low operating costs and long, trouble-free service. Available in sizes for delivery of from 40,000 to 400,000 Register B. t. u. per hour, this series enables you to meet the requirements of any customer to his complete satisfaction. Write for Catalog No. 253 which gives detailed information.

Fuel shortages, either threatening or existent, have made thousands of furnace users keenly interested in equipment that helps to conserve gas, oil or coal. That's why your opportunity for profit with REX AIRPAK Blower Filter Units is now better than ever before.

When you sell Winter Air Conditioning based on REX AIRPAK and the prospect's present furnace, you do not sell mere comfort through controlled circulation of heated, filtered and humidified air. You sell fuel conservation at the same time!

Feature this fact in your promotion and sales presentations and feature REX AIRPAK in the conversion jobs you handle. You'll find the going smoother than you ever thought possible.



2313 Superior Ave., Cleveland 14, Ohio

# FOLLANSBEE SEAMLESS TERNE ROLL ROOFING

When you have a really tough roof repair or maintenance contract you'll find you can do a better job with FOLLANSBEE SEAMLESS TERNE ROLL ROOFING because it's so easily handled and quickly installed. And there's the profit angle, too—it's all in your favor when you make a practice of using FOLLANSBEE SEAMLESS TERNE ROLL ROOFING.

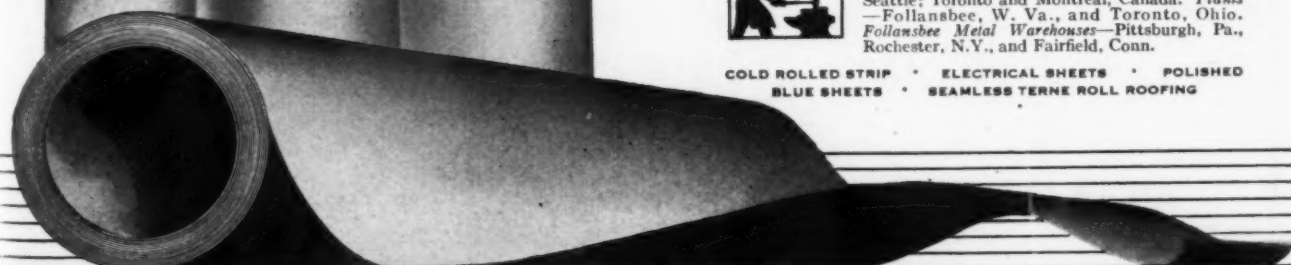
Your Distributor is receiving periodic allocations of FOLLANSBEE SEAMLESS TERNE ROLL ROOFING—it will pay to keep in touch with him.

FOLLANSBEE STEEL CORPORATION  
GENERAL OFFICES • PITTSBURGH 30, PA.

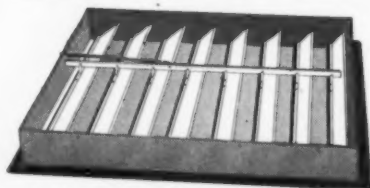


Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee. Sales Agents—Chicago, Indianapolis, St. Louis, Kansas City, Nashville, Houston, Los Angeles, San Francisco, Seattle; Toronto and Montreal, Canada. Plants—Follansbee, W. Va., and Toronto, Ohio. Follansbee Metal Warehouses—Pittsburgh, Pa., Rochester, N.Y., and Fairfield, Conn.

COLD ROLLED STRIP • ELECTRICAL SHEETS • POLISHED  
BLUE SHEETS • SEAMLESS TERNE ROLL ROOFING



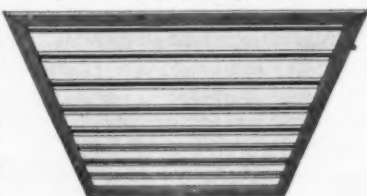
## AIR-FLO AUTOMATIC CEILING SHUTTER



TOP VIEW -- OPEN -- LESS MOULDING

FOR  
FANS  
ATTIC

Built so they can be installed practically flush with the ceiling, AIR-FLO Ceiling Shutters present a refined, finished appearance. Their natural aluminum color blends with any decoration, eliminating need for painting, and no grille or winter cover is required. Furnished in 5 different widths, single panel up to 73" long. No operating mechanism shows. Built-in fusible link. Meets Fire Underwriters requirements. Write for illustrated catalog 42-C of the complete AIR-FLO line.



VIEW FROM BELOW -- CLOSED  
(with moulding)

**AIR CONDITIONING PRODUCTS CO.**  
2340 W. LAFAYETTE BLVD. DETROIT 16, MICH.

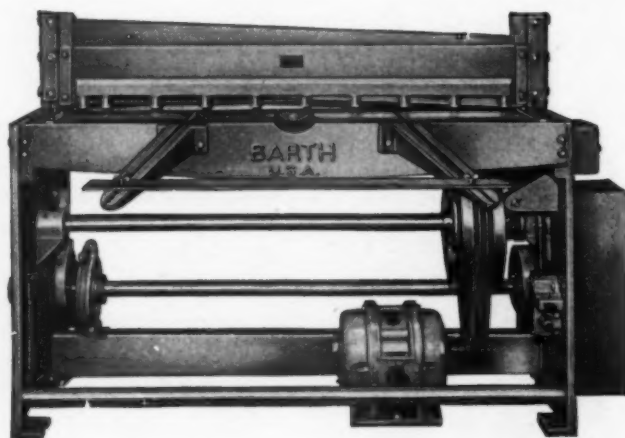
so rehabilitated his thinking that his entire outlook on life has been rejuvenated.

Space will not permit detailed discussion of individual cases, but the files of the debt adjustment companies are crammed with humor and pathos and success stories that would rival any that have ever been penned. Men and women freed from oppressing debt—some of them for the first time in their adult lives. Families prospering and progressing. Regular savings. Soundly financed home plans. Advancement in employment and increases in income. These are some of the common results when the seeds of sound family and personal budgeting have been carefully sown.

Our company is proud of having pioneered with debt adjustments, and our plan has been followed (often with our advice and assistance) by companies in other cities in the United States and Canada. Assistance has also been given to employers in communities where no debt adjustment companies operate, to help such employers work out plant programs for the assistance of over-indebted workers.

The value of the debt adjustment plan and budget management service is tremendous for employers and creditors, as well as for the debtors involved. Yet complete debt liquidation costs the debtor little (much less than the cost of garnishments and attachments), and there is no charge to the creditor and employer, although they share in the benefits.

So when safety records slip, production declines, and unrest is in the air for no apparent reason, investigate and find out if debt-worry among your employees is the cause. If so, recommend the services of a reliable debt adjustment company to help pull the workers out of



## BARTH Power Shears

Absolute finality in design and construction, these 14-gauge Power Shears represent long, careful study of the sheet metal fabricator's needs. Many outstanding features make these shears another progressive addition to the rapidly expanding BARTH line. Available in 52" and 72" sizes.

**THE BARTH MANUFACTURING CO., Milldale, Conn.**



## CAN IT BE THAT YOU HAVEN'T *tried* THARCO?



No other furnace cement is like THARCO . . . none can be, since THARCO is the product of a secret Armstrong formula.

So uniformly excellent is this cement that leading furnace manufacturers have used it *year after year*...and our steady customers among contractors run into many hundreds.

### Look Here!

1. SMOOTH AS SILK — can be applied FASTER — no lumps, no wastage.
2. NO SHRINKING, cracking or checking—positive guarantee of gas-tight furnaces.
3. STAYS PUT—greater adhesion to metal parts due to secret Armstrong formula.
4. LASTS LONGER — permanent bond not affected by time or high temperatures.



**THARCO**  
*Asbestos Furnace Cement*  
THE ARMSTRONG COMPANY  
4045 So. La Salle St. 321 So. Park Ave. 319 So. Broadway St.  
CHICAGO DETROIT DALLAS

Yet THARCO costs no more than average quality. So *why don't you try it?* TRY IT — for jobs installed in less time, for jobs that last in perfect condition much longer.

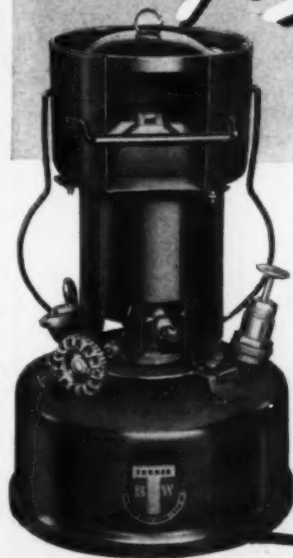
### HANDY . . . Ready to Use

THARCO Asbestos Furnace Cement is conveniently packed in metal containers — sizes to meet every requirement — from 1-lb. cans to 350-lb. drums. Your jobber can supply you, or write today to nearest Armstrong plant for complete information.

## PRESENTING TURNER'S NEW LOW-PRESSURE

No. 475

# Turner's Fire Pot



- ★ SMOKELESS
- ★ SPARKLESS
- ★ SOOTLESS

ABSOLUTELY NEW! HAS TURNER'S  
EXCLUSIVE "CARBURETOR CONTROL" FOR  
MORE PERFECT COMBUSTION. MAKES  
OLD-STYLE CHARCOAL BURNERS  
OBSOLETE!



### Compare These Features . . .

- Ready for operation in 5 minutes
- Fuel capacity one gallon; burns for 9 hours on one filling
- Safer . . . reduces fire hazard of old-style charcoal burners
- Soldering iron rest keeps points of soldering coppers out of direct flame . . . saves re-tinning
- Complete with Turner's exclusive "carburetor control" . . . providing solid blue flame with more perfect combustion; also a flame control — for exact heat desired — which automatically cleans the orifice, thereby eliminating need for separate cleaner wire
- Construction assembly permits quick, easy accessibility and cleaning . . . windshield, top-plate, and bail handle are one unit, and can be lifted from tank in five seconds by loosening one wing nut
- Burner coil made of extra-heavy seamless steel tubing . . . protected by sturdy outer jacket that maintains heat without overheating . . . can be generated and used in heavy wind.

See Your Jobber . . .

**THE TURNER BRASS WORKS**

SYCAMORE ILLINOIS

Since 1871

## PERFORMANCE PLUS!

### ATH-A-NOR

### Furnaces and Parts



Performance is the yardstick for measuring the efficiency of any heating plant, and those that will operate year after year with little or no attention are the ones which will return you the most profit.

You're sure of top drawer performance when you install ATH-A-NOR Furnaces and parts exclusively. Over fifty years of furnace manufacturing experience guarantee you home heating plants with performance ratings and lasting qualities to satisfy the most critical clients. Investigate now . . . write for literature.

**MAY-FIEBEGER COMPANY**

*Manufacturers of Quality Heating Equipment  
for Over Fifty Years.*

Newark

Ohio

the hole. If there is no such service in your city, it will be worthwhile to consider its inauguration as a cooperative plan among employers in your area. In any event, cooperate. It will pay dividends in better workmanship, better safety records, better labor relations, and that intangible something that has no price tag—the feeling of having helped someone over a rough spot in the road.

Dingle—

(From page 78)

be forced to take what she can get for the business. There is no "spare" man available.

We can not recommend a partnership arrangement between an experienced and financially responsible business man and his understudy, usually a capable young fellow, without experience or financial resources. We do, however, believe that through corporate organization the principal owner can allow competent young men to become stockholders in a small way, gradually increasing their stockholdings as their ability and capital increases, with the ultimate end that such "understudy" or spare will, upon the retirement, disability or death of the principal stockholder, succeed to the ownership of the controlling interest in such business. This plan offers a definite future and usually attracts and holds capable young men where an arrangement based solely upon current compensation fails. The older business man should realize the advantage of permitting his younger assistants to build their



## MICROTHERM CONTROL

### NOT JUST A NEW NAME . . . BUT A RADICALLY NEW AND DIFFERENT SYSTEM OF TEMPERATURE CONTROL

A completely new method of Heat Control, which provides a steady flow of heat into the home, modulated, at all times, to the correct temperature to accurately offset the heat loss in existence every moment. A system which provides constant air circulation. There are no surges of heat, no

"off periods"—no temperature variations. Stratification, chilly floors, and drafts are eliminated when Microtherm controls are on the job. Your Crest-aire heating units is operated at just the right capacity to produce constant comfort.

**\*NOW!** STANDARD EQUIPMENT  
with all CREST-AIRE FORCED-AIRE  
UNITS FOR COAL, OIL AND GAS!

In the sincere belief that your customers are entitled to constant comfort when they purchase forced warm-air heating installation, and in the realization that proper control and continuous circulation of air at modulated temperatures are essential to comfort, Crest Industries now include Microtherm Controls as standard equipment with all Crest-aire Forced-air Units.

\*After March 1, 1948.

Write for Details!

*Crest Industries*

INC.

*Chicago 1, Illinois*

75 EAST WACKER DRIVE

# GREAT NATIONAL

*"Weathcrafters  
for the  
Nation"*

Three-Pad  
EVAPORATIVE  
COOLER

Reduces  
Temperature  
10 to 25  
Degrees



*Challenger*

## GREAT NATIONAL AIR CONDITIONING CORPORATION

2125 NORTH HARWOOD - DALLAS, TEXAS

# Add "Proven Performance"

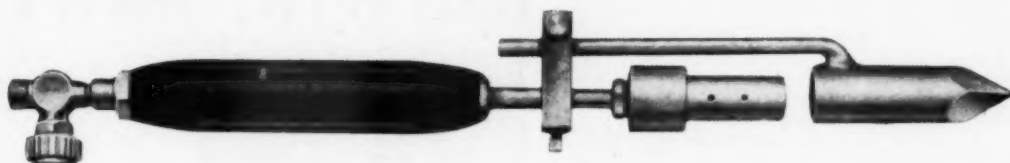
to your other reasons  
for selecting

## GREAT NATIONAL EVAPORATIVE COOLERS

Twenty-five years of experience stand behind the design and construction of G. N. EVAPORATIVE COOLERS. Thousands of installations testify to "Proven Performance."

Write Now for Dealership  
In Your Territory

# C-O-N-T-I-N-U-O-U-S S-O-L-D-E-R-I-N-G



{HOOKED and  
HEAVY-DUTY  
coppers also  
available . . . }

## A G E Soldering Torch

- Torch No. 75-S . . . assures **CONTINUOUS** heat for iron or sweat soldering. Fired by clean-burning bottled gas . . . no waiting, no pumping, no soot, no carbon, no fuel waste.
- High intensity flame (1800°) . . . **EASILY REGULATED** by needle control valve . . . stays lighted regardless of draft conditions.
- Efficient, dependable, convenient . . . either **ON THE JOB** or **IN THE SHOP**.
- **ECONOMICAL** . . . 75 hours of continuous burning on 20 pounds of gas. Other models available for light and heavy duty work.

WRITE or telephone, without obligation, for full details, prices, etc.

WHOLESALE and JOBBERS inquiries invited.

## ALL GAS EQUIPMENT CO.

3878 N. Green Bay Ave., Milwaukee, Wis.

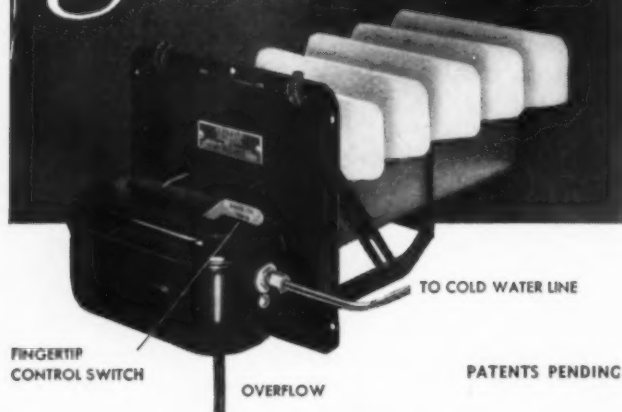
Telephone: COncord 6556

Operates on **BOTTLED GAS**  
(More intense heat than city gas)

**PORTABLE** . . . for use in your shop or on the job. Hose connections (cylinder to torch) available in 10' and 20' lengths. Torch interchangeable with Plumber's Furnace No. P5 (shown below).



*There's* **SALES APPEAL PLUS**  
in the **NEW**  
*Skuttle* **SERIES 600!**



**SELF-FLUSHING! SELF-CLEANING!**  
**QUICKLY, EASILY INSTALLED!**

No doubt about it, the new Skuttle Series 600 is a "natural" for you . . . an all-purpose automatic humidifier that's loaded with quality features.

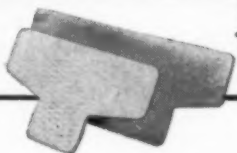
**SELF-FLUSHING, SELF-CLEANING**—Right! This new Skuttle unit takes the curse off cleaning. Just raise the fingertip control switch and Skuttle's exclusive vacuum-controlled cleaning system does the rest . . . flushes the entire unit, drains off all water, sludge, mud and mineral deposits, then refills again automatically. No hand scraping required! Other important features include drawn seamless copper pan (3" x 12"), five replaceable Vapoglas plates having 316 sq. in. evaporating area, automatic anti-siphon float control valve.

**QUICKLY, EASILY INSTALLED**—Just one hole in the plenum . . . that's all it takes to install the new Series 600! No rear supports needed! No clean-out panels required! Entire unit quickly removed for simplified, convenient servicing.

**FLEXIBLE, ALL-PURPOSE UNIT**—Keep your inventories at a minimum with the Series 600! It meets most humidifying requirements and it's adaptable, too, in sloping bonnets or straight plenums of both gravity and forced air furnaces. Just one unit to carry in stock!

Standard units equipped with 5 ft. copper tubing, saddle and needle valve.

**VAPOGLAS PLATES MEAN  
REPEAT PROFITS FOR YOU!**



For top efficiency, evaporating plates should be replaced once each heating season. And Skuttle's patented Vapoglas plates can bring you this yearly repeat business from every installation you make. They absorb 70% more water per pound than ordinary ceramic composition plates assuring maximum moisture output.

Cash in on the new Skuttle Series 600 . . . and keep on cashing in year after year with Skuttle's exclusive Vapoglas evaporating plates! See your local jobber now . . . or write today for state listings and the complete Skuttle Profit Story!

**Skuttle**  
**MANUFACTURING CO.**  
4099 BEAUFAIT  
DETROIT 7 MICHIGAN

savings into the business rather than to have them invest their current savings—if any—in some other business.

If the business man will build into his organization a capable young fellow, teach him the business from all angles—selling, buying, management, etc.—he can in time slow down or retire and retain a substantial stock interest in the business. At his death, his widow can retain a minority interest on which she can perhaps realize an annual return four or five times greater and with equal safety as she could obtain from outside investment of the proceeds from the sale of the stock. The younger man, if properly trained and given an opportunity to ultimately acquire the controlling interest in the business, can usually be depended upon to perform his full responsibility to his disabled or retired benefactor, or the widow of such benefactor. Another thought. The business man should realize that the customers who, by their continued patronage, have enabled him to make a success financially, have a right to expect continued service after he has retired or died. In other words, the successful man owes his community a continuation of this service even after death, and should so plan his affairs as to leave an able and competent successor to carry on in his stead.

Another advantage of the corporate form of business organization is the ease by which a successful business man may divide his property among the members of his family, thereby enabling them to acquire, before his death and without inheritance or estate taxes, a portion of his estate which will otherwise go to them at his death. We shall discuss this feature more fully in the near future under Estate Planning.

## REPAIR PARTS

for . . . **STOVES • FURNACES • BOILERS**

also

**FITTINGS • REGISTERS • SUNDRIES**

and . . .

**FIVE GREAT LINES  
OF HEATING EQUIPMENT**

★ **ARMSTRONG!** ★ **MODERNAIRE!**  
★ **LUXAIRE!** ★ **RYBOLT!**  
★ **JACKSON and CHURCH**

**YOUR COMPLETE HEATING NEEDS CAN BE  
FILLED BY BUYING AT—**

**DES MOINES  
STOVE REPAIR COMPANY**

SAM C. GREEN  
FRED R. GREEN

DES MOINES, IOWA  
SINCE 1869

# Save yourself TIME and MONEY

Order Furnace Fittings from

*"Made-Rite"*



## INVESTIGATE MADE-RITE CONNECTING LOCK STRIP

Patent Pending

Here's a time and material saver for speedy and air tight installations of trunk line and wall stack fittings with all the "Know How" of years of experience in the manufacture of precision "Made-Rite" fittings. Write for complete details today and you will receive our prompt attention.

NO JOB can be better than the fittings you use and no fittings can be better than ours. We've always made a conscientious effort to supply the finest fittings and get them out to our customers with a minimum of time and trouble.

You'll find that dealing with us will be a pleasant and profitable experience. We have a complete line of fittings and accessories to meet your every need and we're sure you'll agree that one order will lead to many more.

Wholesale jobbing inquiries respectfully invited and will receive our usual prompt attention.



*"Made-Rite"* Co., Inc.

10th & Monroe St. Newport, Ky.

## RANDALL

double-  
lubricated

## PILLOW BLOCKS

... add them to your sales kit

You sell more jobs . . . easier . . . when you standardize on Randall Pillow Blocks. Their exclusive oil-graphite design is a mighty convincing sales argument.

Show your prospect a Randall Pillow Block. Let him see for himself how lubricating graphite grooves are actually part of the precision-machined, phosphor bronze bushing. Tell him

about the added protection of oil that feeds to the bearing surface through the graphite . . . Randall's exclusive oil-graphite lubrication that means extra years of quiet, trouble-free service.

*Double-lubricated Randalls cost no more. Get the detailed story of Randall design and the Randall line. Write for Catalog 47.*

SELF-ALIGNING  
QUICK INSTALLATION  
BIG OIL RESERVOIRS  
STURDY HOUSING  
ACCURATELY MACHINED  
SELF-LUBRICATING



Streamliner—  
One-Piece Steel Housing

# RANDALL GRAPHITE BEARINGS, INC.

Dept. 211

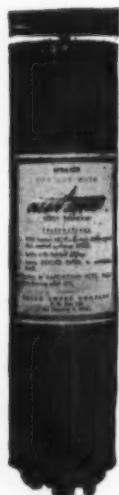
609 W. Lake Street,

Chicago 6, Illinois

## A HARD TO BEAT CLEANING COMBINATION



### SOOT REMOVER AND SPRAYER



Saves many hours on service calls, sells profitably for customer use. Cleans all kinds of oil burning units and is approved by leading manufacturers. Can be used on low fire or pilot without cooling burner. Sprayer is strong, durable, made of heavy steel. Does not suck back sparks, will not corrode when used with Clean Sweep.

**HANDY  
SAFE  
NON-CORROSIVE  
NON-EXPLOSIVE  
FAST ACTING  
ECONOMICAL**

CLEAN BURNERS SAVE FUEL



**CLEAN SWEEP CO.** P. O. BOX 156  
S. LANSING 9, MICH.

"LOOK FOR THE BROOM ON THE PACKAGE"

## "BASIC CONDITIONS OF COMFORT HOME HEATING"



This practical new service manual, containing information of every day usefulness, is available to everyone interested in better home heating. For your copy, fill in and mail coupon below.

BACHARACH INDUSTRIAL INSTRUMENT CO., 7000 BENNETT ST., PITTSBURGH 8, PA.

Send me Free copy of your Service Manual—Bulletin 734

NAME \_\_\_\_\_ POSITION \_\_\_\_\_

COMPANY \_\_\_\_\_

STREET \_\_\_\_\_

CITY AND STATE \_\_\_\_\_

We are—☐ Dealer... ☐ Jobber... ☐ Mfr.—selling heating equipment checked:

☐ FORCED WARM AIR ☐ GRAVITY WARM AIR ☐ STEAM ☐ WARM WATER

☐ Gas-Burning ☐ Oil-Burning ☐ Stoker-Fired

In small corporations, such as are here discussed, we find it a wise plan to have an agreement by and between the several stockholders, providing that such stock may not be sold to outsiders without first offering such shares to the other stockholders. Such an agreement may also require a stockholder-employee to sell his stock if and when he leaves the company's employ.

We caution against too hasty action, also against a poorly planned program. If the ideas here sketched appeal to you, discuss the entire program with your accountant and your lawyer, who can help you avoid some of the mistakes which occur through carelessly thrown together corporations. Weigh carefully the results to be obtained and act only after thorough preparation.

**Markstein—**

(From page 80)

address should always be given and, if telephone orders are desired, the phone number.

3. Put the selling punch into the first line of the ad.

This line is the classified advertisements' headline. It must also stop the reader, a job done in display ads by the head and illustration combined. In going over the first draft of the selling copy in order to boil it down, pick out the strongest selling argument and feature this in the first line. Be sure it is one that ties in with the reader's-eye view of things—the advantages he will reap by purchasing your merchandise.

Speed Up Orders With a

## BEVERLY SHEAR

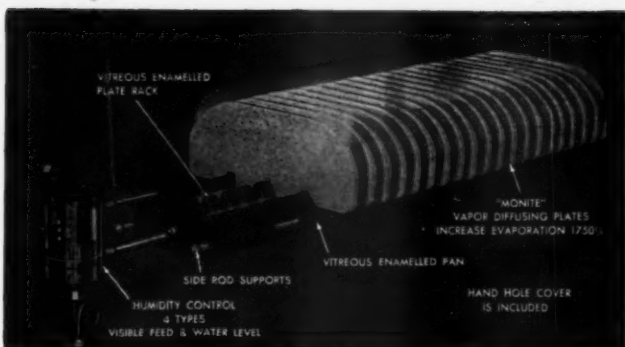
Throatless shears that cut any shape . . . straight, circular or irregular. **FASTER**—accuracy! Order No. 1

for 14 gauge. No. 2 for 10 gauge. No. 3 for 3/16 inch mild steel and 10 gauge stainless. Available with or without stand.

**BEVERLY SHEAR MFG. CO.**

3001 W. 110th Place Chicago 43, Ill.





## MONMOUTH HUMIDIFIERS

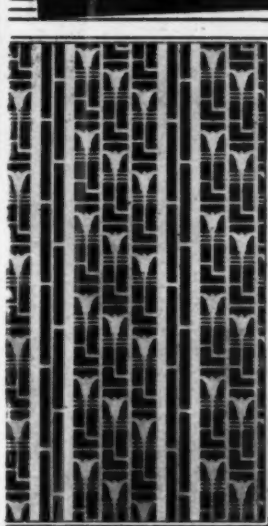
• This accessory is really an outstanding **PROFIT ITEM** for any dealer! You do not have to carry a large stock—with *three sizes* selected from the entire Monmouth line, you cover about 80% of all installation requirements. Get our price on this 3-package kit, with *your recommended sales price*, and then figure up the nice profit you have every time you put in a Monmouth. Installing a humidifier alone is a profitable job, and when added to furnace repair, reset or replacement work, it is doubly worth while.

Every warm air system, new or old, needs healthful, automatic humidification. For dependable service and trouble-free efficiency, Monmouth leads them all—correctly engineered, conscientiously built—no headaches afterwards. We also make Monmouth Humidity Conditioners for all radiator jobs. Details and prices on request.

**THE CLEVELAND HUMIDIFIER CO.**

7802 Wade Park Ave., Cleveland 3, Ohio

**FUNCTIONAL...and *Decorative***  
for  
**Heating, Ventilating and Air Conditioning**



### It's **H & K PERFORATED METALS**

H & K can provide the right material and the right pattern for every job. Grilles, louvres, screens, baffles, guards . . . all these uses demand the twofold treatment of practicality and architectural harmony. There is a wide range of precision sizes, shapes and spacings.

Get the facts . . . and you get the benefit of H & K's 65 years of valuable experience.

H & K "Make Your Own" Safety Guards . . . strong, safe, inexpensive. Ask about them!

*The*  
**Harrington & King**  
PERFORATING CO.

5649 Fillmore St., Chicago 44, Ill. 114 Liberty St. New York 6, N. Y.

Now Only \$2.00 for This Outstanding Book  
on Air Conditioning

The Third Edition of

## AIR CONDITIONING FOR COMFORT

by SAMUEL R. LEWIS

288 Pages—6½" x 9¼"—Cloth Bound

Easy to understand . . . accurate . . . comprehensive . . . these are the features of this third edition of Samuel R. Lewis' well-known AIR CONDITIONING FOR COMFORT.

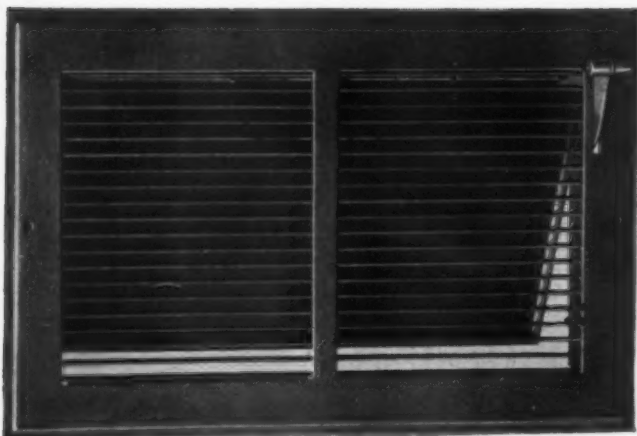
Fundamentals are fully and clearly covered. Correct procedure in designing complete systems for both residences and large buildings is explained step by step. In addition, considerable original data on such subjects as standards, noise control, measurements, and fire protection codes has been included.

Send \$2.00 for a copy today to the address below. We know you will consider this one of the finest air conditioning books you have yet seen, but if you should be dissatisfied with it for any reason whatever, your money will be promptly returned to you.

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Chicago 2, Illinois



Sidewall Register	-	-	#20
Sidewall C. A. Grille	-	-	#28
Baseboard Register	-	-	#24
Baseboard C. A. Grille	-	-	#27
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Immediate  
Delivery  
on  
5" & 6"  
Heights

## MIDCO REGISTER CORP.

1059 Grand Ave.\*

St. Paul, Minn.

Factory Representatives Wanted for Some Territories.



## New! HEXDALL DUCT HANGERS

U. S. Patent No. 2264666

Hang ducts like "greased lightning"... make more money on each job... save up to 92% on labor with these sensational new cadmium-plated duct hangers. No special tools. You minimize strain on your men, reduce accidents. No lost or worn-out tools. Eliminate strip steel, nails, screws, bolts, rivets, or wire... handle all types of duct material, including aluminum. Get free samples and free folder—write us today, including name of your favorite jobber!

**A. M. HEXDALL CO.**  
MORRIS, ILLINOIS  
Manufacturers of Sheet Metal  
Specialties.

**JOBBER AND SALES AGENTS**... This new development is the sales sensation of the sheet metal industry. Write for information about territories available, literature, samples, and prices.

4. *Be brief, but tell the whole story.* It is better to write fifty words, if fifty words are needed to tell the entire message, than to cut the copy to twenty-five words—and tell only half of your sales story.

5. *Low-priced jobs make ideal classified advertising offers.* These bring in a number of customers, who, once in, often see, like and buy other work.

6. *Remember that the reader is looking for your ad when you run it on the classified pages.* There is no need to be coy, no need to arouse his curiosity before proceeding to sell him; the ad's message should be straight selling. Bear down on hard, intensive appeals to buy-it-now.

### Brotherton

(from page 102)

culties rendering spotwelding unsuitable. An example of such a material would be X 4130 or 4140 steel. Because of the marked reaction of these air hardening steels, with resultant shrinkage and extreme thermal stresses, the formation of sound and uniform spots would not be possible. The aluminum alloys and stainless, low carbon and some other alloy steels all lend themselves to satisfactory spotwelding. There is, however, a marked difference between the treatment of these materials.

During the past few years, the use of spotwelding in attaching plates or lugs to armor plate in military tank construction has been accomplished with considerable success. Because of the success in this field,

## EASY EXTRA PROFITS on every Automatic-Heat installation

*Lowest Cost*  
**HOME INCINERATION**  
available!

**Majestic**  
No. 30 FUELLESS  
HOME  
INCINERATOR

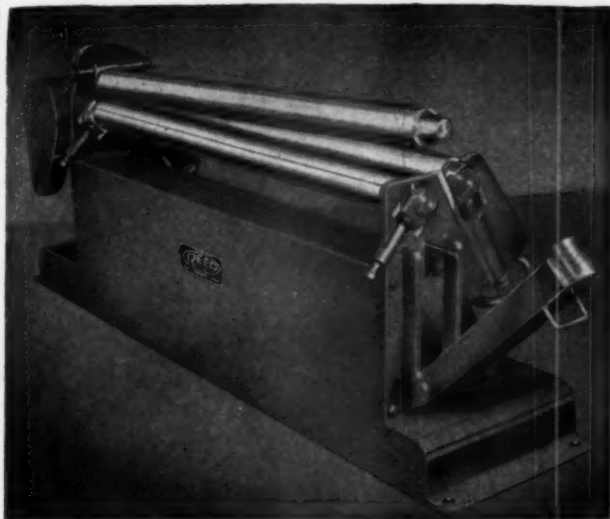
Low cost and "self-burning" action bring quick sales for this easy-to-install incinerator—especially where automatic heating prevents rubbish-burning in the furnace! Burns wet or dry garbage and rubbish; advanced down-draft action dries the waste constantly. Contents need be ignited only once or twice a week; ashes removed only once or twice per month. Unit is only 2 feet in diameter, less than 3 feet high! Uses any 8-inch flue; will not affect heating-plant efficiency if tapped to furnace flue. Handsome silver-and-blue duotone finish! Write for details!

**The Majestic Co.**  
842 Erie Street  
HUNTINGTON, INDIANA



Nationally Advertised Home Necessities for Over 40 Years.

**BUY THE BEST . . . BUY A  
REED ALL STEEL BENDING ROLL**



Here, for both production and job shops  
is the answer to light gauge rolling jobs.

Made in five sizes, from 36" x 10 ga.  
to 72" x 16 ga.

- ★ ALL STEEL
- ★ COMPACT
- ★ BRONZE BEARINGS
- ★ ENCLOSED BEARINGS
- ★ LOW IN COST

Available for prompt delivery, and we do mean **PROMPT**

**REED ENGINEERING COMPANY**

ENGINEERS AND MANUFACTURERS  
CARTHAGE, MISSOURI, U. S. A.



**To Your SPECIFICATIONS**

All sizes—accurately rolled to any diameter—complete circles  
or any part thereof—made in every dimension, furnished with or  
without bolt or rivet holes.

You'll appreciate this when you back them up or fit them  
on the job.

Used for reinforcing tanks, joining pipe or smoke stacks, in-  
stalling air conditioning fans, and thousands of other uses.

"FABRICATING to customers' specifications and prints" has  
enabled us to accumulate a large stock of punches and dies for  
piercing, blanking, notching and forming—available to you. Send  
us your fabricating requirements.

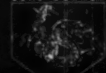
Write for our circular illustrating the  
scope of our service.

**NATIONAL METAL FABRICATORS**

2136 S. SAWYER AVE.

CHICAGO 23, ILL.

ECON-O-COL  
COAL BURNER

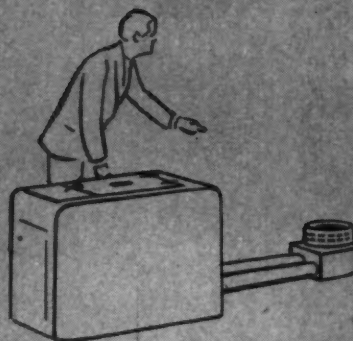


THE SHIELD  
OF QUALITY

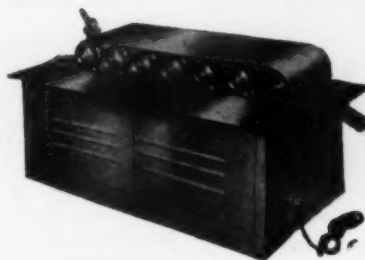
**ECON-O-COL**

*The "Stronghearted" Stoker*

BUILT BY COTTA TRANSMISSION  
COMPANY • ROCKFORD, ILLINOIS



**SHEET METAL  
MACHINERY**



MODEL "S" (PORTABLE)

Forms Pittsburgh Locks, Acme Locks and  
Drive Cleats

**SEE US FOR**

Pittsburgh Lock Machines, Roll Forming Ma-  
chines, Roller Dies, Pipe and Elbow, Beading,  
Turning Machines and all other Sheet Metal  
Working Machinery.—Your inquiries invited.

**MAPLEWOOD MACHINERY CO.**

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CHICAGO, ILL.

# HOMER

FURNACE & FOUNDRY CORPORATION

## MANUFACTURERS OF FURNACE AND BOILER REPAIR PARTS



Attractive prices  
to volume buyers  
PLUS free deliv-  
ery by Homer's  
own fleet of fast  
trucks.

FOR CATALOG  
AND COMPLETE  
INFORMATION,  
WRITE, WIRE OR  
PHONE . . .



HOMER FURNACE & FOUNDRY CORP.  
COLDWATER, MICHIGAN



If it's Sampsel-built, quality is assured. A never-ending Research and Engineering program is devoted to product improvement, new product design, and development of special control applications for individual heating equipment manufacturers. This technical "know-how" has much to do with Sampsel's proven ability to combine fine performance with attractive price. Write for catalog showing the complete Sampsel line.

Sampsel Time Control, Inc., Spring Valley, Ill.

**Sampsel**  
AUTOMATIC CONTROLS

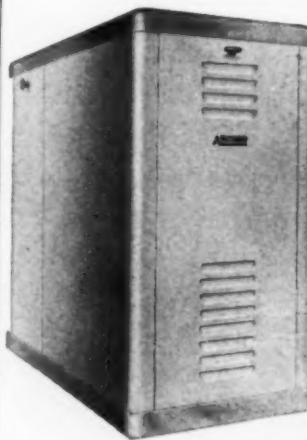
Canadian Sales Distr: Pease  
Foundry Co., Ltd., Toronto



spotweld technicians believe that with research and development many more alloy steels may be spotwelded in the future. This is a field which is now being actively explored and is the subject of research investigations at the Ryan Aeronautical Company.

Materials having resistance of equal value can be spotwelded together even though their chemical compositions are not the same. It is preferable to weld materials of similar composition. In the aluminum alloys we find that the electrical resistance will vary according to the chemical composition of a given alloy. The thinnest sheet is the determining factor in developing strengths of the spotweld. For this reason the designer must bear in mind that a wide variation in sheet thicknesses is not desirable because only a small proportion of the total strength of the thicker member can be utilized. Keeping the thicknesses of the gauges to be spotwelded as similar as possible allows for uniform penetration, rapid production and tends to prevent critical spotwelding conditions. A ratio of  $3\frac{1}{2}$  to 1 thickness limits between two sheets should not be exceeded.

In the absence of a design manual, the designer should consult the production man for the dimensions and clearances necessary to use the existing spotwelding equipment. This is sound practice because, while the gauge combinations may be well within the capacity of the machine, sufficient head clearance must be allowed around the electrodes so that the holders and electrodes may enter the area to be spotwelded. The use of this type of information by the



the new  
**ANCHOR**  
AIRE

## OIL FIRED STEEL FURNACE SELLS FAST!

For profit this year, offer the new ANCHOR-AIRE. Its beauty and thermostatic ease of operating will appeal to the ladies. Its mechanical perfection, economy and durability will appeal to men. And, both your prospects and you will be delighted with its surprising lack of maintenance. Anchor Division, Stratton & Terstegge Company, P. O. Box 311, New Albany, Indiana.

### ANCHOR-AIRE FEATURES

1. Forced air circulation-of required heat . . . no more . . . no less.
2. One unit, welded combustion chamber eliminates seepage of smoke and fumes.
3. Boiler plate steel furnace insures longer life without maintenance.
4. Baked enamel cabinet of cold rolled steel assures lasting beauty.
5. Flange-mounted, Pressure Atomizing type, Oil Burner.
6. Fully automatic controls guarantee properly humidified, constant heat.

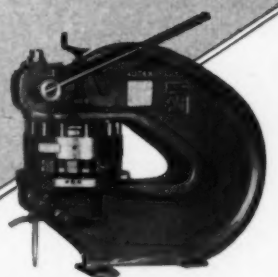
MODERN OIL FIRED  
WINTER AIR CONDITIONER



**ANCHOR**  
AIRE

# ROTEX

*quick  
change*



# PUNCHES

Rotex 18 is ideal for any shop fabricating sheet material. Changes instantly... 17 sizes from  $\frac{5}{32}$ " to 2" with 2" nibbling shear. Clean, fast, accurate... 10-18 gauge capacity. Used by small and large shops—Fisher Body, General Electric, Lockhead, Douglas, many railroads. First cost is lower, yet the Rotex does more work faster, better.

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## ROTEX PUNCH COMPANY

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Made By  
**ROCK ISLAND**  
... You Know  
They're Good!

No. 802 AIR-VANE Forced Air Register

Quality of equipment is essential to the performance and life of any modern forced warm air heating installation. You'll find that Rock Island's AIR-VANE Line will fill the bill for you on the most exacting jobs. They're constructed with vertical or horizontal vanes for right or left or downward deflection of air flow. Multi louvre dampers for closing and 15 degrees downward directional air flow are standard. This versatile model is also available with single louvre in wall or baseboard registers. Check the complete Rock Island line... if it's a Rock Island Register you KNOW it's good.

## ROCK ISLAND REGISTER CO.

2435 FIFTH AVENUE

ROCK ISLAND, ILL.

## a New name in winter air conditioning SEQUOIA FURNACE



Series "UM"  
Gas Fired

- ★ Gives Maximum Heating Efficiency
- ★ Requires Little Floor Space
- ★ Has Beautifully Designed Cabinet
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- ★ Provides Positive Air Circulation
- ★ Cleans All Air
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Or Write—

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Ball Bearing Action  
Rigidly Braced  
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Heavy Gage Steel  
Economical - Efficient



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Leading Jobbers  
From Coast to Coast

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Manufacturers of

Penn Power-Pul-Air-Liberty-Penn Turbines  
For Over 25 Years THE BUILDER'S ROOF TOP LINE

BETTER  
DELIVERY

## VICTORY REGISTER

MODERATELY  
PRICED

(STYLE V)

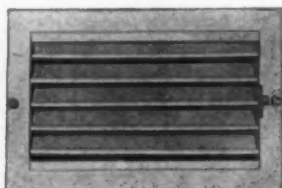
A ONE-PIECE REGISTER OF STURDY CONSTRUCTION

### PERFORMANCE

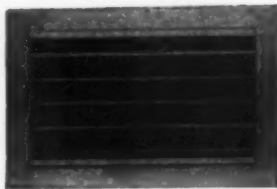
Up-Down deflection as required for "Good Practice" rating by "YARDSTICK", published by National Warm Air Heating and Air Conditioning Association.



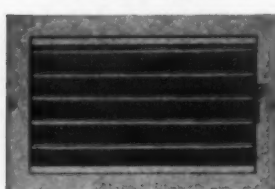
CLOSED



DOWN DEFLECTION



STRAIGHT



UP DEFLECTION

Write for Catalog #12 showing all types  
of Air Conditioning Registers and Grilles.

REGISTER & GRILLE MANUFACTURING CO., Inc.  
66 BERRY STREET BROOKLYN 11, N. Y.

design engineer together with spotweld diameter, edge distance, spot pattern and spacing, will yield two-fold results—sound design and increased production. Below are listed a few recommendations gathered from Ryan experience as to the type of information the designer should have at hand:

- (1) Throat depth of spotwelder.
- (2) Distance between arms.
- (3) Diameter of electrode holders.
- (4) Dimensions and shapes of standard electrodes commonly used by the production department.
- (5) Angular set-ups possible on the machines available.
- (6) Special electrodes such as offset and others which are available.
- (7) Minimum and maximum clearances required by production for the fabrication of channels, hat-sections, Z-bars and others.

Although spotwelding is not an all-purpose method of manufacturing, there are, nevertheless, many cases in which spotwelding can replace rivets in lightly stressed assemblies. In some instances the substitution can be made directly while in others, a slight modification in the design of the part may be required. Where redesign is indicated, the increased production and decreased cost will most certainly offset the expense incurred.

### Preparation

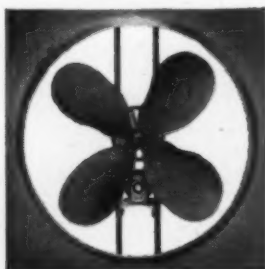
Because of the high electrical conductivity and rapid heat transfer which is characteristic of aluminum



Homes and buildings now being planned and built with ModernAire Attic fans are investments in "Temperatures For Comfort" that will bring years of satisfaction and contentment to the owners.

ModernAire Attic Fans are famous for their expert engineering, fine construction and smooth, economical performance. Investigate now the advantages and costs of ModernAire Attic fans for builders. Write to . . .

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A PLIER • A WRENCH • A HANDVISE



Ideal Clamps for Sheets & Templates  
**SNAP ON-SNAP OFF!**  
TERRIFIC  
TOGGLE ACTION  
GRIP

SQUEEZE handles together, then let go; holds like a vise but easily releases by spreading the handles. Parallel grip. Bottom jaw swiveled to grip off shapes—only tool of its kind with this feature!

Excellent bolt or pipe wrench. Fine for holding work to be ground, filed or drilled. Body of heavy pressed steel, and welded jaws of hardened tool steel. Two sizes: No. 1610, 10"; No. 1607, 7". At dealers only.

SEYMOUR SMITH & SON, INC., 901D MAIN ST., OAKVILLE, CONN

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Gas  
Conversion Burner  
with the Exclusive  
"AIR-LOCK" Principle



Model 8-CD  
Listed by American  
Gas Association

The Reinhard "Air-Lock" principle causes the flame to spread and reach the sides of the fire-box quickly without the use of baffles, thus ensuring maximum fire travel and heating efficiency. All valves and controls are under cover—nothing shows in the basement but the neat, attractive casing.

Quality Products for Over 45 Years

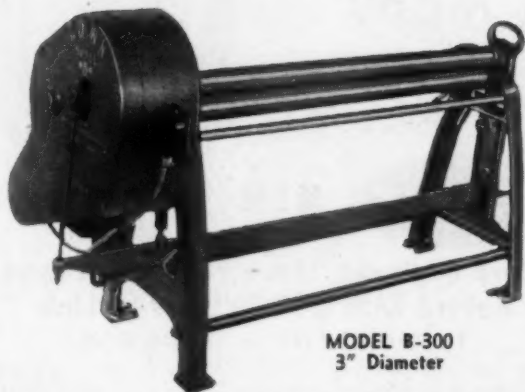
Complete Line of Gas Conversion Burners  
Domestic • Industrial • Commercial

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## LOWN Slip Roll Forming Machines FIT YOUR JOB!



MODEL B-300  
3" Diameter

If you want MORE PRODUCTION and ECONOMICAL OPERATION, use LOWN Slip Roll Forming Machines.

Our machines are designed for sturdiness and ease of operation to provide peak productivity.

*Rugged — Rigid — Attractive — Prompt Deliveries.*

The LOWN Slip Roll Forming Machines are built in a range of sizes from which you can choose the exact unit for your requirements.

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San Angelo, Texas . . . . . E. Upton & SFE Tracks  
Distributors in Most Principal Cities — Write for Bulletins.

## WHITNEY-JENSEN PRODUCTS

30 YEARS EXPERIENCE

### NO. 141 NOTCHER

Notches to 13/16" deep



*This popular tool again available*



### NO. 38 THROATLESS BENCH SHEAR

Capacity—3/16"  
Blade Length—5"  
Height of Shear—9"  
Length of Shear—11"  
Width of Shear—7 1/2"

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## WHITNEY METAL TOOL COMPANY

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## PROFIT NOW!

WITH  
GRAND  
RAPIDS  
FURNACE  
CLEANERS



It's easy to get a lion's share of furnace cleaning profits when you use a Grand Rapids Furnace Cleaner. Greater cleaning capacity, handling ease and practically designed groups of furnace cleaning attachments help you give better service and clean more furnaces per day at a higher profit.



*Act now! Write today for complete information and prices.*

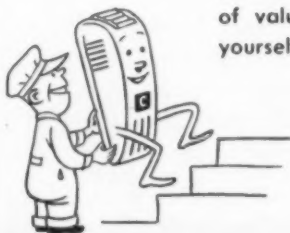
DOYLE VACUUM CLEANER CO.

227 Stevens St., S.W.

Grand Rapids 7, Michigan

## CASH IN ON CURIOSITY....

● Double your profits on your average furnace service call! When the lady of the house comes to see "What you're doing to the furnace", demonstrate and sell her a Crise Heat Control. If her furnace is hand-fired . . . steam, hot water or warm air . . . show her how a Crise Control eliminates hundreds of steps every day to adjust drafts . . . saves up to 20% of valuable fuel. You'll make yourself a profitable sale!

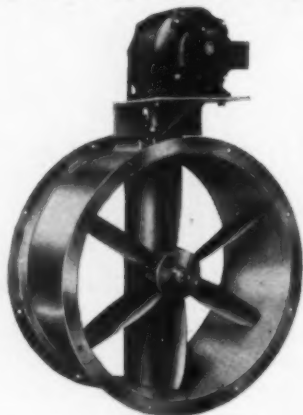


Write us for your nearest Crise jobber's name. Ask about Crise consumer folders, newspaper mats and demonstration panels.

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COLUMBUS 16, OHIO

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**Immediate Delivery!**

Complete Line of Sizes from 12" to 42"  
With or without Motors

The ultimate in positive elimination of fumes and vapors in paint spray booths and other hazardous locations.

*Write for Descriptive Literature  
and Prices*

**THE DANA FAN & BLOWER CORP.**  
(Formerly Geo. B. Klee Co.)

3501-27 Colerain Ave.

Cincinnati, 23, Ohio

alloys, extreme care must be taken in their preparation for spotwelding. Surface cleanliness is one of the primary requisites for consistency in the spotwelding of these alloys.

The cleaning operation will vary depending upon the material. The principal function of this cleaning operation is removing oils, greases and general contamination and freeing the surface of any oxides whose electrical resistance would prevent a uniform current flow through the material. Considerable literature has been written regarding the most suitable cleaning methods ("Surface Preparation" July, August, 46 AA) and only a brief word or two will be mentioned here.

Roughly, the cleaning is divided into two general types: (1) Mechanical brushing in which steel or wire brushes or, in some cases, rubber bonded abrasive wheels will lightly polish the surface of the material to be spotwelded in the weld area. The initial cost of this equipment is rather low although the labor cost is quite high. Because of the difficulty of obtaining consistently uniform results, and because of the danger of removing the protective layer of aluminum from alclad, this method has not achieved general use. (2) Chemical solutions. A wide variety of chemical solutions are available, all of which perform essentially the following functions:

- Step 1. Removal of oil and grease.
- Step 2. Rinsing.
- Step 3. Removal of oxide and establishing a uniform surface.
- Step 4. Rinsing and drying.

*There's Profit  
in the Air  
with*

**UTILITY**

**AIR COOLERS**



**More Business, More Profit than Ever  
Before with UTILITY'S 1948 Line  
11 Models—1150 to 12,000 CFM**

Big new sales opportunities . . . Bigger value than ever . . . Smoother, quieter, even more efficient operation . . . Lower installation, operating and maintenance costs . . . Longer life . . . Less servicing. These are some of the features of Utility's 1948 line of Evaporative Air Coolers that mean more installations, more profit per job, highly pleased customers.

**Big New DEALER MANUAL Helps You Sell and Install**  
You get the most complete, the most useful, sales, installation and service handbook ever put together. Gives you just the information it takes to close a deal and figure the installation to assure user satisfaction.

*Extra Set of Filter Pads Free . . . with each Utility Cooler. Gives you a premium for prospects.*

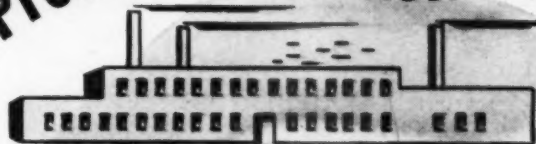
*Get Complete Details on Dealer Franchise*

# UTILITY

**APPLIANCE CORP.**

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**Production is Rolling..**

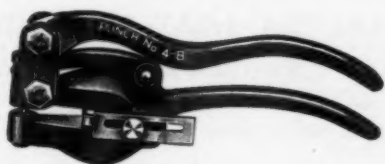


**On GERETT  
 "E-Z-ON"  
 Damper Regulators**

● WIDESPREAD demand from furnace and heating contractors for the famous, time-saving "E-Z-ON" Damper Regulator has kept us "humping" here at Gerett to supply as many as possible, with reasonable promptness. If your supply house is temporarily out of "E-Z-ONs", try again soon. Our deliveries are improving daily, and, if your jobber does not have them today, try again tomorrow.

**M. A. GERETT CORP.**  
 Milwaukee 5, Wisconsin

**A REAL *Time Saver***



**The No. 4B PUNCH  
 by *Whitney***

This punch is accepted by leading contractors and dealers as a real time-saver in the shop and on the job. Men who use it every day know it can't be beat for clean, fast punching. Has a capacity of 1/4" through 16 ga., weight 3 pounds, 8 1/2" in length, depth of throat, 2". Complete tool includes three punches and three dies of specified sizes with die adjusting key.

**W. A. WHITNEY MFG. CO.**  
 636 RACE ST. ROCKFORD, ILL.

**YOUNGSTOWN FITTINGS FIT!**

**I**T ISN'T mere happenstance that makes our statement correct. We plan our products, pipe and fittings for gravity and winter air conditioning, so that they "go in" with a minimum of time and change. We'll be getting more metal soon (we hope) and want you then to ask your Wholesaler about our lines.

**YOUNGSTOWN FITTINGS FIT**

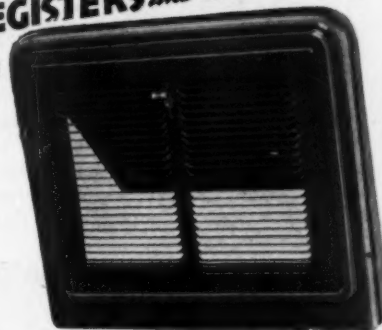
**YOUNGSTOWN FURNACE COMPANY**

627 Marshall Street

Youngstown, Ohio

**EFFECTO-GRILLE**

**NOW AVAILABLE!**  
*A Complete Line of*  
**AIR CONDITIONING and**  
**GRAVITY REGISTERS and GRILLES**



No. 120A  
 GRAVITY REGISTER  
 with Removable Face for  
 Gravity or Air-Condition-  
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**the Line that has Everything!**

- EASE OF INSTALLATION
- PERFORMANCE
- BEAUTY
- POPULAR PRICES
- PROMPT DELIVERY

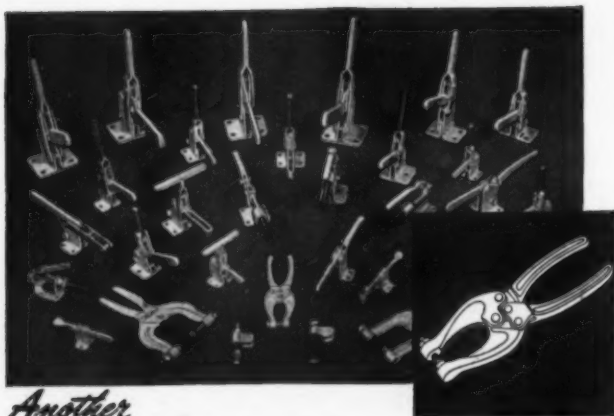
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DETROIT 27, MICH.



*Another*

## DE-STA-CO CLAMP Designed to *Take It!*

A new addition to the versatile De-Sta-Co family of production clamping tools. No. 464 Portable Clamp designed for sheet metal work. Positive toggle lock holds parts fixed for drilling, riveting, welding. Speeds assembly of ducts, housings, cabinets, auto bodies. Ideal for template work.

No. 464 Plier Clamp offers a firm hand grip for opening and closing. Jaws clear flanged metal edges. Adjustable for efficient pressures. Narrow nose for close spaces. Entire tool is forged and can be altered easily for special application. Replaceable hardened steel bushings minimize wear. Write for additional information on Model 464, or catalog No. 47 describing complete line.

*De-Sta-Co clamps are stocked in principal industrial centers*

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## Installation Time Cut with the

**MODERN**

### FLOOR FURNACE

YOU can install the MODERN Floor Furnace quickly and easily because you install it WITHOUT REMOVING THE BURNER. Just cut the hole in the floor and wall and drop in furnace. You don't have to attach burner after furnace is in wall. No trap door, no patching. Overall depth of only 24 inches makes basement or pit unnecessary. ONLY FLOOR FURNACE WITH CONCEALING WALL REGISTER AND FLOOR GRILL. Economical to operate. Approved by A.G.A. Guaranteed for 10 years against corrosion—1 year against defects. At present available in only 57,000 B.T.U. dual model.

*Immediate Delivery  
Now  
Write Now for  
Complete Details*

**MODERN FURNACE & DEVELOPMENT CORP.**  
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### NATIONAL OIL HEAT EXPOSITION

CHICAGO COLISEUM — APRIL 5-8, 1948

#### *Here's why you must be there*

*This will be the largest industry show ever held—covering 27,150 square feet! Record-breaking display area — record-breaking number of exhibits — record-breaking attendance — assured!*

**T**HE latest and best in burners, equipment, accessories and supplies are being shown. Dealers and distributors from every State in the Union, from many foreign lands, will flock to Chicago to prepare for a record breaking '48 selling season.

Lay your plans now for the most profitable vacation you've ever had. Not only the Show, but the Silver Anniversary Convention is taking shape, with the most important and constructive meetings ever held. The ladies are invited too, with a full schedule of entertainment "on the house".

Plan now to attend. For hotel reservations, write the Convention Housing Bureau, 105 West Madison Street, Chicago 2, Illinois. This is one show you cannot afford to miss.

**OHI, 6 East 39th Street, New York 16, N. Y.**

### SILVER ANNIVERSARY

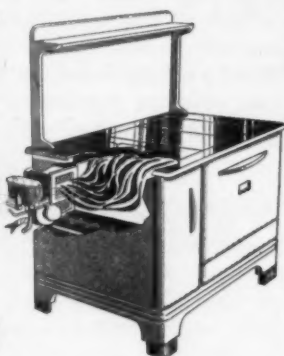
#### NATIONAL OIL HEAT EXPOSITION

**CELEBRATING 25 YEARS OF PROGRESS  
AND SERVICE TO AMERICA**



# Profits!

## Through the SUPER-THERM Combination OIL BURNER



SALES PROSPECTS for this modernizing, easily installed oil burner are *all* owners of wood and coal stoves and ranges. Super-Therm fits any size stove, front or rear—will last a lifetime—will not soot or smoke—has automatic safety features. Write now for details and *dealer profit facts*.

## THERM OIL BURNER CO.

Pioneers of the Oil Burning Industry

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## It's Here...The New Low Cost High Quality CHILL-AIR Recirculating Pump



Here's a big profit maker at minimum cost! Designed for Evaporative Coolers, Coolants for lathes and machine tools, Fountains, Displays and all light industrial pump uses.

The heavy duty totally enclosed motor, with *moisture proof* vacuum-impregnated field coils, has a stainless steel shaft; large, easy oiling, permanent alignment oilite bearings that require only one oiling during the cooling season. Cast brass pump bracket and impeller housing (die stamped brass impeller).

This "quiet" large capacity pump consumes only 60% of motor capacity under full load. It's trouble-free and has no equal in excessive humidity applications.

### GUARANTEED FOR ONE YEAR

**Distributors:** Few choice territories open. Write for details.

**Dealers:** Order sample from manufacturer now. A Chill-Air Distributor in your territory will serve you.

Manufactured by

**NATIONAL ENGINEERING & MANUFACTURING CO.**

523 Wyandotte

Kansas City, Mo.

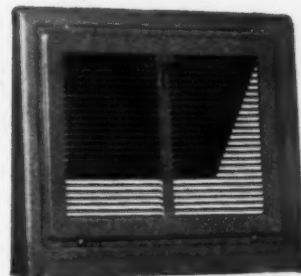
## NEW STANDFORD PERFORATION OF ALL METALS

## GRAVITY BASEBOARD REGISTERS

## NOW IN PRODUCTION

### QUICK DELIVERY!

2-Piece Construction with Removable Face of "BEND-EZY" Design. Metallic Finish.



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Immediate Delivery on All Standard Sizes

### SPECIFICATIONS:

Duct Size	Base Ext.
10" x 8"	2 1/4"
12" x 8"	2 1/4"
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### PERFORATED METALS FOR EVERY INDUSTRIAL USE

[ We also manufacture the MIRRO-GLO LINE of Bathroom Medicine Cabinets. ]

WRITE FOR  
COMPLETE  
INFORMATION,  
PRICE LIST.

## STANDARD

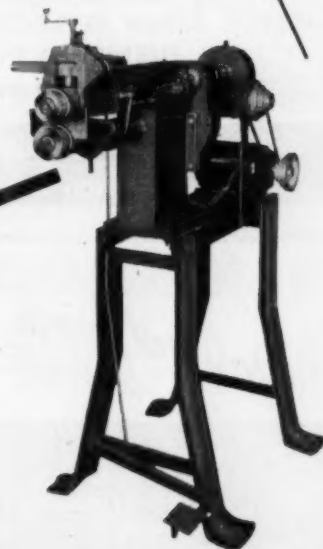
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## STAMPING & PERFORATING CO.

CHICAGO, ILLINOIS

## MILTON ROTARY MACHINE

MOTOR  
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4 SPEEDS  
13" THROAT  
16 GAUGE  
CAPACITY



### Performs

WIRE TURNING  
BURRING  
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BEADING  
OPERATIONS

### Immediate Delivery

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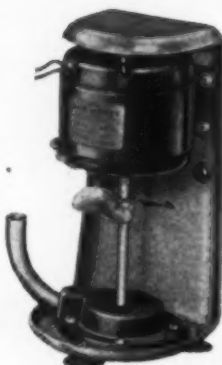
Philadelphia 6, Pa.

WA 2-1734

## Morey Products SPELL BIGGER PROFITS FOR YOU IN 1948

### RECIRCULATING PUMP

This small, sturdy 4 g.p.m. at 64" recirculating pump has ample capacity for all sizes evaporative coolers. Excellent for circulating coolants, spot welding, all light industrial pump uses. Only 10" high, weighs but 8 lbs. Designed for maximum output; self-aligning oilite bearings. Pump stand of 16 gage steel. Mounted on rubber suction cups for quick installation. 1/30th h.p. fan cooled motor. Furnished for 110 or 220 volts. Dealer Discount 40%—Jobber Discounts 40-20%. **Write for prices.**



### MOREY FLOAT VALVE

Designed for evaporative coolers, small cooling towers, stock feeders and many other uses. Morey Float Valves are simple in operation—easy to clean. Corrosion resistant;  $\frac{3}{8}$ " pipe connection.



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with*



OIL BURNING  
WATER HEATERS  
FLOOR FURNACES  
AIR CONDITIONING FURNACES

**DESIGNED TO Sell... PROFITABLY**  
GILCO'S PRODUCTS CORPORATION  
BOWLING GREEN, MICHIGAN

Considerable difficulty can be caused for the spot welder if the assemblies are not handled in such a manner as to keep them clean. Chips lodged between sheets, oils, greases and general contamination which can mar the surface of these parts during assembly, all result from faulty handling.

### Aluminum Fuel Tanks

UNDERWRITERS' LABORATORIES, INC., in cooperation with the Oil Heat Institute, the Technical Committee on Fuel Tank Sheet division of the Aluminum Association, and several tank manufacturers, has recently conducted a series of tests to determine if aluminum tanks could be constructed that would comply with the strength requirements for steel tanks as outlined in Underwriters' Standard, Subject 80, Inside Tank Equipment for Oil Burners, dated November, 1934.

The results of these tests indicate that acceptable aluminum tanks can be constructed if they incorporate the proper head and shell joints and if the proper thickness, alloy and temper aluminum sheet is used. From the information so gathered the Underwriters' Laboratories has prepared a temporary standard for aluminum tanks. Any manufacturers interested in securing approval on an aluminum tank can secure all the necessary information from the Laboratories.



### America's Favored OIL BURNER

Because of its many outstanding features . . . and its record of superior performance over ordinary burners . . . Heatcraft is enjoying ever increasing enthusiasm among users from coast to coast.

Write or wire today for details about the 7 important Heatcraft features and the attractive set-up for Heatcraft dealers and distributors.

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STOKERS • FURNACES • GAS BURNERS

**HEATCRAFT COMPANY**

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makes tough  
jobs easy!

**To Solder...Tin with TINIT**

Tinit cleans and tins tough repair jobs or new surfaces in one easy operation—saves your time for profitable work—penetrates rust, dirt and grease. Used successfully for 18 years. Sold by automotive, refrigeration service, tinning supply and other jobbers.

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STANDARD HAND BRAKE  
ONE MAN OPERATION

**DREIS & KRUMP MANUFACTURING CO.**  
7404 LOOMIS BLVD. CHICAGO 36, ILL.

## ORNAMENTS



### STAMPINGS & SPINNINGS

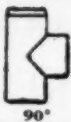
Zinc Ornaments Available From Stock. Copper, brass, bronze, aluminum and stainless steel ornaments made up promptly.

*If you don't have catalog K, send for it NOW.*

**MILLER & DOING**

65 YORK STREET

BROOKLYN, N. Y.



GRAY'S  
TIME  
SAVERS

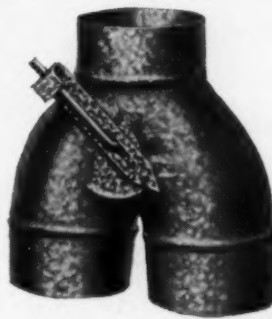


SET No. 1—ELBOW PATTERNS—1" to 20" in 2-3-4-5-6 & 7-piece, T-patterns 2" to 20" & elbow charts, 147 FULL SIZE PATTERNS.....\$5.00  
SET No. 2—ELBOW PATTERNS—20" to 40" in 3-6-7-8-9-piece & ELBOW, ANGLE, RADIUS, & CIRCUMFERENCE charts, 105 patterns.....\$5.00  
SET No. 3—45 degree, BRANCH PATTERNS, 2" to 12" on 3" to 30" trunk line, 252 patterns.....\$5.00  
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SET No. 5—A, 30 degree, BRANCH PATTERNS, 2" to 12" on 3" to 30" trunk line, 252 patterns.....\$5.00  
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THE ELBOWS—ANGLES, 45 or 30 degree branches cover everything in MILL or FACTORY work, ARE GREAT TIME SAVERS.  
A Card will bring you my pattern circular covering all patterns carried and ready to forward by return mail, such as puttybar hipped & single pitch SKYLIGHTS, also puttyless patterns & chart.  
Stationary and revolving VENTILATOR PATTERNS, COLLECTOR PATTERNS 6" to 20" INTAKE, SHIP VENTILATORS 4" to 48" dia. base, and many others.

**G. L. GRAY**

Mention Artisan

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NEW HAVEN 3, CONN.



## "CRARYS" RAIN WATER CUT OFFS

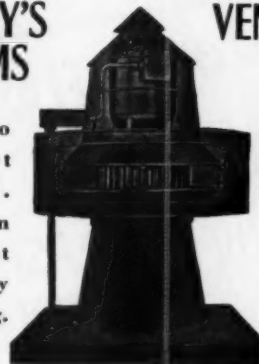
Made in all Standard  
Conductor Pipe Sizes.  
Plain Round and Cor-  
rugated Round.

Write for Prices and  
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Nason

(from page 106)

is recommended for aluminum work in contact with masonry.

Since both aluminum and stainless steel sheet metal work that is installed prior to finishing construction operations is subject to accidental injury many contractors try to preserve the fresh appearance of their production by applying a lacquer coating over the work.

Many times aluminum cabinets and other assemblies are bolted or screwed together with bare steel bolts and screws. This may in time cause weakening of the joint due to the electrolytic action of the two dissimilar metals. It is better to use aluminum bolts and screws, but if one wishes to use steel, on the basis that steel bolting makes a stronger connection, it is practical to use aluminum or aluminum-coated washers under bolt heads and nuts or substitute stainless steel for bare, ordinary steel.

In exhausting acid fumes or making chemical vats for corrosive liquids it is not always sound to use aluminum. The same can be said of other competitive sheet metals. In fact, no single metal successfully resists all such destructive forces. But aluminum has been found satisfactory for nitric and acetic acids, varnish resins, hydrogen peroxide, food and beverage fermentation acids and sulfurous gases. It is, on the other hand, unsatisfactory for strong alkali solutions and their fumes.

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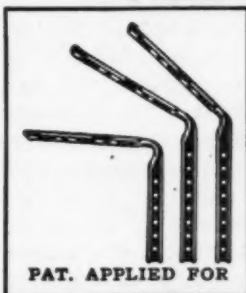


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"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

Write us about your problems. Send for Bulletin No. EX-41

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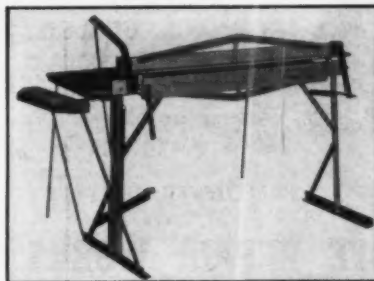
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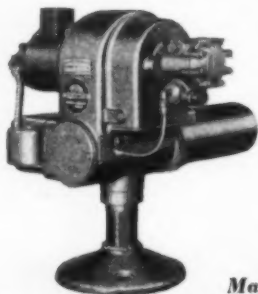
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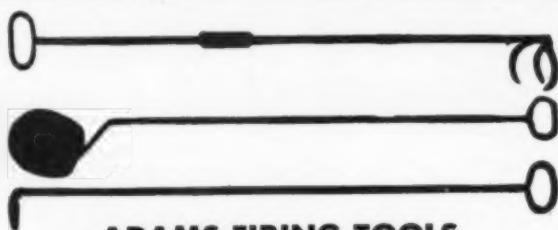
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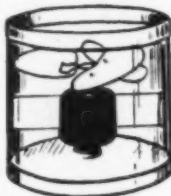
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Zideck—

(From page 110)

direction of the upturns in the longer sides proceeding unobstructedly, quickly, and smoothly.

Difficulty arises only if we must make upturns in the metal in both directions: one flange up, the other down. This can be done if the notchout in the meeting places of the upturns allows the brake-leaf to operate. Commonly, the leaf consists of a 3/16-inch wide portion of the leaf proper, with a 3/16-inch bar bolted to it, as indicated in Fig. 1. By removing this bolted-on bar, we have only a narrow portion of the leaf to contend with, so that a proper notchout in the sheet metal will permit upturns in the opposite direction from the principal, or long side, brakings. This arrangement makes possible a *step-formation* in the sheet metal, the step being in its width conditioned by the 3/16-inch wide leaf working upon the metal. But all of these two-directional upturns must be made, preferably on the narrow sides of the body worked, with the body held in the hands of the operator, with only the margin under bending reposing in the brake. This is necessary because the common brake and the pan and box brake do not provide for bent metal (flanged down), missing the leaf or sinking into the platform of the brake, which would become a requirement in up-and-down bending of the metal inserted through the brake. In view of the press brake coming more and more into use, this machine permitting bending the metal in either direction, the pan and box brake will likely remain in its present form.

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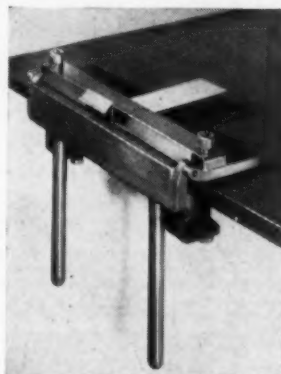
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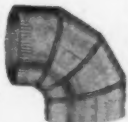
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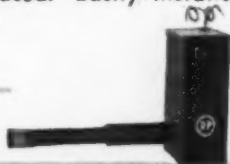
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